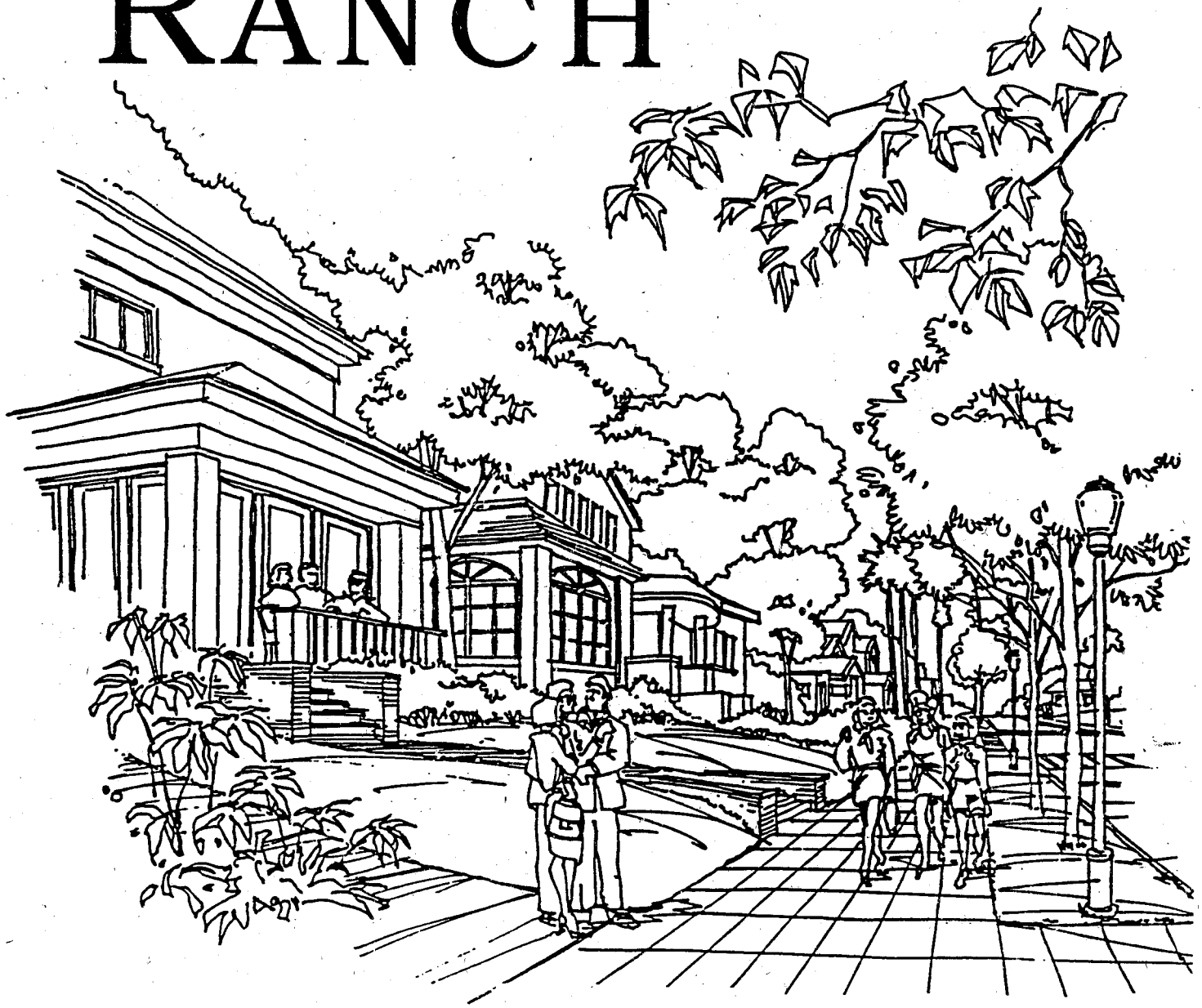
# OTAY RANCH



CITY OF CHULA VISTA

COUNTY OF SAN DIEGO

# RESOURCE MANAGEMENT PLAN

**COUNTY OF SAN DIEGO**
**Certificate of Adoption**

I hereby certify that this is a true and correct copy of the Otay Ranch Resource Management Plan adopted by the San Diego County Board of Supervisors on the 28th day of October, 1993.

This document was adopted as part of Board Policy I-109, which is intended to implement various policies of the Otay Subregional Plan, Volume 2 (GPA 92-04).

Brian P. Bilbray, Chairman

Attest: Thomas J. Pastuszka,
Clerk of the Board

# DOCUMENT CERTIFICATION

I hereby certify that this document incorporates and represents the final version of the Phase I Resource Management Plan, which constitutes a Support Document to and a part of the approved General Development Plan for the Otay Ranch Project (PCM-90-03) as duly passed, approved and adopted by the City Council of the City of Chula Vista on October 28, 1993.

Robert A. Leiter, Director of Planning

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# PREFACE

# PREFACE

This Otay Ranch Resource Management Plan (RMP) Phase 1 is a comprehensive planning document that addresses the preservation, enhancement, and management of sensitive natural and cultural resources on the 22,899-acre Otay Ranch property. The RMP is intended to be the functional equivalent of the County of San Diego Resource Protection Ordinance (RPO) for Otay Ranch. Subsequent Otay Ranch projects (maps and permits) are specifically exempted from the provisions of the RPO "if determined to be consistent with a Comprehensive Resource Management and Protection Program which has been adopted by the Board of Supervisors for the 'Otay Ranch'" (RPO, Article V, Section 9). No specific guidelines are included in the RPO with respect to the content and characteristics of the "Comprehensive Resource Management and Protection Program." With respect to sensitive habitats, Article IV, Item 6 of RPO allows disturbance of sensitive habitat "where mitigation provides an equal or greater benefit to the affected species."

The following discussion is intended to provide a basis for comparing the RMP to the RPO. Although the goals of both are nearly identical, the two differ in their approach and in their general methodology to achieve the goals. The goal of the RMP is establishment of an open space system that will become a permanent Management Preserve dedicated to the protection and enhancement of the multiple resources present on Otay Ranch. The intent of the RPO is "to increase the preservation and protection of the County's unique topography, natural beauty, diversity, and natural resources" (RPO, Article I). The RMP is intended to be implemented as part of the overall integrated planning approach for Otay Ranch. The County's RPO is implemented on an individual, project by project basis. While both approaches are appropriate under specific circumstances, direct comparison is difficult. This Preface has been prepared to assist in understanding both approaches. It reviews the intent of the various sections of RPO and how the RMP addresses those intentions. It also describes the benefits of the RMP that may not be available to a process, such as the RPO, that must, of necessity, be applied to individual

projects on a parcel- by- parcel basis. A summary table is provided at the conclusion of this Preface that compares the standards of the Otay Ranch RMP to the standards of the RPO.

The RPO was written to apply to the most commonly proposed projects. These generally may be described as tentative parcel maps and use permits. Such projects include specific lot and engineering information. The RPO applies to the entire County which covers thousands of lots and ownerships, all of which are governed by an existing land use plan. The RPO therefore is applied on a lot-by-lot basis when a project is proposed.

The RMP is designed specifically for Otay Ranch. This is a single large ownership ( 22,899 acres) that is being planned entirely at the same time. Lot lines are not being proposed at this time and will not be known for some time. It is therefore possible to consider resources irrespective of legal parcels (240 such parcels currently exist on Otay Ranch). Open space can be planned just as other land uses are planned. Long term management can be planned and provided just as public facilities are planned and managed. Management of natural resources will become increasingly necessary as the population of the County continues to grow.

Strict application of the RPO to Otay Ranch may result in more open space acreage than is proposed by the RMP, but also could result in the intrusion of development into a variety of non-sensitive areas surrounded by high quality resources. Habitat value may be reduced and degraded over time as development and open space are intermixed. The RMP proposes preservation of large blocks of interconnected habitat areas.

To facilitate review of the RMP with respect to its relationship to the RPO, it is helpful to comment on the existing data base to provide a detailed RPO analysis of Otay Ranch and on the implications of applying the RPO to future individual developments within Otay Ranch. Incorporation of large blocks of interconnected habitat into a Preserve that would result from

preservation of key resource areas as required by the RMP may not occur should the RPO be applied to future development within Otay Ranch for several reasons:

1. In general, the resource mapping of Otay Ranch has been completed at 1,000-scale. This level of mapping generally identifies large blocks of sensitive areas and large blocks of non-sensitive areas. More detailed mapping, that would be completed if the RPO were applied to a specific project within Otay Ranch, likely could identify sensitive resources in areas formerly identified as non-sensitive and vice-versa. For example, better topographic mapping may reduce the amount of property in slopes equal to or greater than 25%, thereby reducing the acreage covered by "Steep Slope Lands" under the RPO.

2. The RPO is intended to apply on a parcel-by-parcel basis. There are approximately 240 existing legal parcels within Otay Ranch. If RPO were applied to each of these parcels, when consideration is given to the access, encroachment, and "taking" provisions, the pattern of resource areas protected in open space for those 240 parcels likely would differ substantially from that which would result from preservation of key resource areas as required by the RMP.

3. Article V, Sections 10 and 3 of the RPO also exempt "any ongoing existing agricultural operation" and "essential public facilities," subject to certain requirements. Otay Ranch is a well-established agricultural operation and it is uncertain what types of agricultural operations would be retained if the property were developed on a parcel-by-parcel basis. The RPO would not apply to those parcels on which agricultural activities are proposed to continue. It also should be recognized that Otay Ranch is traversed by a number of existing and planned essential public facilities. A partial list includes the proposed SR-125, CWA aqueduct easements, utility easements, the Otay Valley trunk sewer, the proposed Salt Creek trunk sewer, and others. Construction of these facilities would be

exempt from the RPO, subject to certain findings. However, public projects would be subject to CEQA or NEPA review. Such review would require analysis of alternatives that would avoid adverse impacts. With the construction of these facilities, the resource areas protected in open space likely would differ substantially from that which would result from preservation of key resource areas as required by the RMP.

The previous discussion focused on the implications of applying the RPO to Otay Ranch on a parcel-by-parcel basis. In the section that follows, the RMP is compared directly to the RPO on an Article-by-Article basis.

## RMP/RPO COMPARISON

### RPO Article I - Findings, Purpose and Intent

Article I states:

> "It is the intent of this ordinance to increase the preservation and protection of the County's unique topography, natural beauty, diversity, and natural resources...."

Otay Ranch offers increased preservation and protection of the County's unique resources through the use of project design to preserve large blocks of natural habitat totalling approximately 11,375 acres and containing the most sensitive resources on Otay Ranch. These are connected by verified regional wildlife corridors. The RMP provides for long term management of the Preserve, with the goal of assuring the existence of such resources in perpetuity. Through management, existing resources will be monitored and remedies recommended for observed declines. Patrols will reduce trespassing and vandalism. Invasive plants and animals will be reduced and enhancement programs will be implemented in degraded

habitat areas to increase their diversity. This combination offers protection beyond that which occurs through simple designation of open space.

As does the RPO, the RMP addresses multiple resources including wetlands, floodplains, sensitive habitats and cultural resources. Steep slope lands also are described in the RMP. Approximately 83% of the steep slopes on Otay Ranch are expected to be preserved through a combination of Preserve and non-Preserve open space. Unlike the RPO, the RMP also addresses paleontological and agricultural resources. Chapter 3 of the RMP includes a comprehensive list of objectives and policies to ensure long-term protection and management of these resources.

RPO Article II - Definitions

This section of the RPO defines many terms. It is not addressed in this comparison.

RPO Article III

1. **Application of Regulations.** This section requires a Resource Protection Study for many different types of discretionary actions, including tentative maps (and revisions), tentative parcel maps (and revisions), major use permits (and modifications), certificates of compliance, site plans, administrative permits, and locations of open space easements.

The County's RPO does not apply to the currently proposed discretionary actions for Otay Ranch. General Plan Amendments and the adoption of Subregional Plans and Specific Plans and their Amendments are not specified in Article III, Section 1 of the RPO; a Resource Protection Study is not required to be completed and approved for these discretionary projects. County staff's Guidelines for the RPO, dated August 1991, also recognize the inapplicability of the RPO, and further state:

> "General Plan Amendments and Specific Plans are omitted from the RPO because they do not provide the indepth, site-specific design necessary to apply the regulations" (Staff Guidelines for the RPO, Part II, Section C.2.a.(1), at p. 9).

A General Plan Amendment and Subregional Plan currently are being processed for the Otay Ranch project. These types of discretionary actions are excluded from the RPO. Although sufficient design data generally are not available to apply the RPO at the General Plan Amendment stage, as noted in the County staff guidelines, completion of resource-based analyses is highly desirable at the General Plan and Specific Plan stage.

However, subsequent Otay Ranch maps and permits are specifically exempted from the provisions of the RPO under certain conditions. Article V, Section 9 of RPO identifies the following exemption:

> "Any project located within the approximately 22,500-acre property (sic) known as Otay Ranch, if determined to be consistent with a Comprehensive Resource Management and Protection Program which has been adopted by the Board of Supervisors for the Otay Ranch."

2. **Resource Protection Study Requirements.** The RPO requires submittal of a Resource Protection Study with submittal of applications for discretionary actions subject to the RPO. The Resource Protection Study may be processed concurrently with the discretionary permit application.

   A Conceptual Resource Protection Ordinance Analysis has been prepared by the Otay Ranch Project Team. The analysis, which includes a slope analysis as required by the RPO, has been reviewed by the County Department of Planning and Land Use (DPLU).

Exhibit 1 illustrates the RPO analysis with existing Otay Ranch legal parcels overlain on it. The RPO analysis prepared by the Project Team incorporated the following criteria and assumptions:

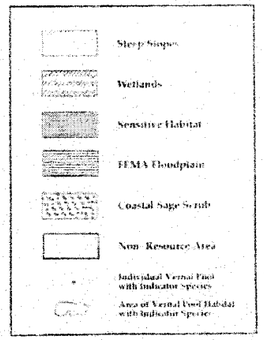
-- Floodplains: FEMA and County mapped floodplains were mapped and calculated; buffer areas were included for County-mapped floodplains.

-- Sensitive Habitat Lands: Habitats on Otay Ranch assumed to be sensitive included the following - live oak woodland, maritime succulent scrub, coastal sage scrub, valley needlegrass grassland, disturbed coastal sage scrub, disturbed valley needlegrass grassland, and coastal sage scrub/non-native grassland. Approximately 200 acres with concentrations of sensitive plant species in non-sensitive habitat areas also were considered to be sensitive.

-- Steep Slopes: Areas with slopes in excess of 25% gradient with a 50-foot rise were mapped and quantified based on the Dames & Moore (1990) slope analysis.

-- Historic and Prehistoric Resources: All sites identified to date were considered to be significant pending completion of significance testing.

-- Wetlands: Wetland habitats were mapped based on the presence of hydrophytic vegetation only and included the following - coast live oak riparian forest, sycamore alluvial woodland, freshwater marsh, southern willow scrub, mulefat scrub, tamarisk/mulefat scrub, baccharis scrub, alkali meadow, aquatic habitat and vernal pools. Vernal pools were defined by the presence of indicator species; the sizes of individual vernal pools and vernal pool watersheds have not yet been determined and buffers were not included in the analysis.




SOURCE: RBF, 1991

1" = 5500'

Phase 1 Otay Ranch RMP

## Resource Protection Ordinance Analysis

EXHIBIT 1

3. **Actions to Protect Sensitive Lands.** The RPO notes that one or more of the following actions may be required to protect sensitive lands - application of open space easements, rezone using a Special Area Designator; other actions as determined by the decision-making body.

The RMP provides detailed information regarding sensitive lands on Otay Ranch. The most diverse habitat areas on the Ranch are included within the Preserve. Policies 2.2, 2.3, 2.4, 2.9, and 2.10 of the RMP establish standards for protection of sensitive habitat lands. Further, the use regulation as part of the General Plan Amendment process will protect the Preserve lands because all uses permitted by that regulation must be consistent with the General Plan (i.e., the Otay Ranch Subregional Plan text).

RPO Article IV - Permitted Uses and Development Criteria

1. **Wetlands.** The RPO restricts uses to aquaculture, research, and wetland restoration. Necessary public facilities are exempt subject to certain findings. The RMP similarly restricts development in wetland areas although isolated wetlands outside the Preserve would be disturbed with development. Extensive wetland restoration is proposed in the Otay River Valley. In general, wetland mitigation and restoration will be carried out in the Otay River Valley and in the proposed Otay Ranch vernal pool preserve. The RMP management approach offers opportunities to carry out mitigation activities prior to disturbance.

In summary, the RMP requires no net loss of wetlands. Restoration of wetland habitats in the river valley will increase habitat for several sensitive and endangered species, such as least Bell's vireo and those associated with vernal pools. Long term management activities will ensure the success of these efforts through monitoring, and implementation of management activities to eliminate adverse influences. Educational programs will

inform the public about the value of natural areas. Policy 2.10 of the RMP establishes standards to ensure no net loss of wetlands.

2. **Wetland Buffer Areas.** The RPO restricts uses to access paths, improvements necessary to protect adjacent wetlands, and all uses permitted in wetland areas.

   Under the RMP, major drainages, including buffers, are in the Preserve. Where necessary, such as in the Otay River Valley, restoration of disturbed buffer areas will be accomplished with habitats compatible with wetlands. Policies 7.1 and 9.7 of the RMP contains specific setback standards and requirements for specific review of development plans adjacent to the Preserve.

3. **Floodways.** Uses permitted under the RPO in a floodway are limited to agricultural, recreational, and other such low-intensity uses provided that they do not substantially harm the environmental values of a particular floodway area. Modifications to the floodway must meet all of the following criteria:

   a) Concrete or rip-rap flood control channels are allowed only where findings are made that completion of the channel is necessary to protect existing buildings from a current flooding problem.

   b) Modification will not unduly accelerate the velocity of water so as to create a condition which would increase erosion (and related downstream sedimentation) or would be detrimental to the health and safety of persons or property or adversely affect wetlands or riparian habitat.)

   c) In high velocity streams where it is necessary to protect existing houses and other structures, minimize stream scour, or avoid an increase in the transport of stream

sediment to downstream wetlands and other environmentally sensitive habitat areas, grade control structures and other erosion control techniques, including the use of rip-rap, that are designed to be compatible with the environmental setting of the river, may be permitted. The use of rip-rap is allowed only when there is no other less environmentally damaging alternative feasible.

The RMP meets the intent of RPO by putting major drainages and their floodways in the Preserve. Some modification may be necessary where roads cross major drainages. The Otay River floodway has been mined extensively and is quite disturbed; it will be modified as part of a comprehensive riparian restoration program. Policies 1.5 and 2.13 of the RMP include standards for protection of floodways.

4. **Floodplain Fringe.** The RPO allows some filling and construction of facilities subject to the following criteria:

a) Fill shall be limited to that necessary to elevate the structure above the elevation of the floodway and to permit minimal functional use of the structure (e.g., fill for access ramps and drainage). If fill is placed in the floodplain fringe, the new bank of the creek shall be landscaped to blend with the natural vegetation of the stream and enhance the natural edge of the stream.

b) Any development below the elevation of the 100-year flood shall be capable of withstanding periodic flooding.

c) The design of the development shall incorporate the findings and recommendation of a site-specific hydrologic study to assure that the development: (i) will not cause significant adverse water resource impacts related to quality or quantity of

flow or increase in peak flow to downstream wetlands, lagoons and other sensitive habitat lands; and (ii) neither significantly increases nor contributes to downstream bank erosion and sedimentation of wetlands, lagoons or other sensitive habitat lands.

d) Lot configurations shall be designed in such a manner as to minimize encroachment into the floodplain. The proposed development shall be set back from the floodway boundary a distance equal to 15% of the floodway width (but not to exceed one hundred feet), in order to leave an appropriate buffer area adjacent to the floodway. The setback may be greater if required by paragraph f.

e) Where appropriate, flowage and/or open space easements shall be used to ensure future development will not occur in the floodplain.

f) In areas where the Director of Public Works has determined that the potential for erosion or sedimentation in the floodplain is significant, all proposed development shall be set back from the floodway so that it is outside the Erosion/Sedimentation Hazard Area shown on County Floodplain Maps. Development will only be allowed in the Erosion/Sedimentation Hazard Area when the Director of Public Works approves a special study demonstrating that adequate protection can be achieved in a manner that is compatible with the natural characteristics of the river.

g) If the subject floodplain fringe land also constitutes wetlands, wetland buffer areas, steep slope lands, sensitive habitat lands or significant prehistoric or historic site lands, the use restrictions herein applicable to such also shall apply.

Construction and filling in the floodplain fringe is prohibited by the RMP with the exception of modifications necessary for road and utility crossings. FEMA and County-mapped floodplains are located in the Preserve. Hardened flood control channels are prohibited and any floodplain modifications must be completed in conformance with State and Federal wetlands regulations. Any floodplain modifications proposed as part of a restoration program for the Otay River Valley must be consistent with the resource protection objectives and policies of the RMP. Policies 1.5 and 2.13 of the RMP establish standards for treatment of floodplains.

5. **Steep Slope Lands.** The RPO encourages clustering to minimize encroachment into slopes in excess of 25%. It allows encroachment of 10-20% depending upon how much of each lot has slopes exceeding 25%. In addition, public roads, private roads, public facilities, and trails all are allowed. The intent is to limit grading on steep slopes that often results in highly significant visual impacts. The RPO addresses steep slopes on a lot by lot basis.

   Through a combination of Preserve and non-Preserve open space, it is anticipated that 83% of the steep slopes on Otay Ranch will remain undisturbed. Specific standards regarding preservation of major landforms and landform alteration guidelines are included in the GDP/Subregional Plan.

6. **Sensitive Habitat Lands.** The RPO generally prohibits development of sensitive habitats. This general approach is quite appropriate for large areas with many different owners and projects. Encroachment onto sensitive lands may occur "when all feasible measures necessary to protect and preserve sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species." Exhibit 1 illustrates sensitive habitat lands on Otay Ranch as identified in the conceptual RPO analysis.

Sensitive habitat lands addressed in the RMP include Diegan coastal sage scrub, maritime succulent scrub, valley needlegrass grassland, riparian woodlands, southern interior cypress forest, oak woodlands and vernal pools. The RMP assures retention of a wide variety of habitats and species through the creation of the Preserve. Key resource blocks that each include many of these sensitive habitat lands were identified based on field mapping. These were then connected by wildlife movement corridors, that have been verified by corridor studies. In total, the Preserve covers approximately 11,375 acres, generally in large contiguous areas. Policies 2.2, 2.3, 2.4, 2.9, and 2.10 of the RMP contain specific standards for the preservation of sensitive habitats. These standards also are presented in the RMP/RPO summary table at the conclusion of this Preface.

7. **Cultural Resources.** The RPO requires preservation of unique historic and prehistoric resources.

Policies 1.3, 2.12 and 6.1 are included in the RMP to assure proper treatment of cultural resources and implementation of an integrated research design providing a regional context for the many cultural resource sites on Otay Ranch. The provision of long term management will reduce damage done by trespassers and pot hunters. This type of protection is seldom available to cultural resources outside of Otay Ranch.

In summary, the RMP recognizes the intent of the RPO, and achieves it using techniques appropriate to the unique conditions associated with the planning process for Otay Ranch. Resources are first preserved through preserve design. Viability is ensured using a combination of ongoing testing, research, monitoring and restoration/enhancement. Finally, resources are protected through a comprehensive management program.

# TABLE P-1
# COMPARISON OF THE STANDARDS OF THE OTAY RANCH RMP TO THE STANDARDS OF THE COUNTY RPO

| Resource Category | Resource Protection Ordinance | | Resource Management Plan | |
|---|---|---|---|---|
| | Standard | Reference | Standard | Reference |
| Wetlands | Uses limited to aquaculture; non-harmful research, education or recreation; and wetlands restoration | Article IV, Item 1 | No net loss | Policy 2.10 |
| Wetland Buffer Areas | Uses restricted to access paths; improvements necessary to protect wetlands. | Article IV, Item 3 | The RMP requires "Edge Plans" for SPAs containing areas adjacent to the Preserve and includes setback criteria for specific habitat types. | Policies 7.1 and 9.8 |
| Floodways/ Floodplains | Uses limited to non-harmful agriculture, restoration and other low-intensity uses; no concrete or rip-rap flood control channels unless required to protect existing structures; permitted uses within the floodplain are those permitted within the underlying zone subject to RPO standards to minimize encroachment. | Article IV, Items 2, 3 and 4 | No concrete or rip-rap flood control channels; conformance to State and Federal wetlands regulations required; major drainages, floodways and floodplains on Otay Ranch would be located in the Preserve. | Policies 1.5 and 2.13 |
| Steep Slope Lands | Encroachments of 10% - 20% permitted depending upon percent of total site containing steep slopes. | Article IV, Item 5 | Most of the steep slopes on Otay Ranch are associated with major landforms such as the San Ysidro and Jamul Mountains that are included in the Management Preserve. A total of 83% of the steep slopes are anticipated to be preserved. | Policies regulating steep slopes included in GDP/Community Plan. |

# TABLE P-1
# COMPARISON OF THE STANDARDS OF THE OTAY RANCH RMP TO THE STANDARDS OF THE COUNTY RPO

| Resource Category | Resource Protection Ordinance | | Resource Management Plan | |
|---|---|---|---|---|
| | Standard | Reference | Standard | Reference |
| Sensitive Habitat Lands | | | | |
| Diegan coastal sage scrub | No encroachment[1] | Article IV, Item 6 | 85% preserved/restored (70% minimum preservation, remainder restoration) | Policy 2.2/Policy 3.4 |
| Maritime succulent scrub | No encroachment[1] | Article IV, Item 6 | 85% preserved/restored (70% minimum preservation, remainder restoration) | Policy 2.2/Policy 3.4 |
| Valley needlegrass grassland | No encroachment[1] | Article IV, Item 6 | 80% preserved/restored (25% minimum preservation, remainder restoration) | Policy 2.3/Policy 3.6 |
| Riparian woodlands | No encroachment[1] | Article IV, Item 6 | | Policy 2.4/Policy 3.5 |
| Southern interior cypress forest | No encroachment[1] | Article IV, Item 6 | 100% preserved | Policy 2.4 |
| Oak woodlands | No encroachment[1] | Article IV, Item 6 | 100% preserved | Policy 2.4 |
| Vernal pools | No encroachment[1] | Article IV, Item 6 | 100% preserved<br>Establish 330-acre vernal pool preserve; preserve 95% of State-listed species; develop management and restoration plan. | Policy 2.9 |
| Pre-historic/Historic Sites | No disturbance of unique sites except for scientific purposes. | Article IV, Item 7 | Preserve significant cultural resources and implement recommendations of Phase 2 RMP systematic surveys. | Policy 2.12 |

**Note:**

1. The RPO prohibits "development, grading, grubbing, clearing or any other activity or use damaging to sensitive habitat lands." The Ordinance states, however, that " The authority considering an application listed at Article III, Section 1 above may allow development when all feasible measures necessary to protect and preserve the sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species" (Article IV, Item 6).

# CHAPTER 1
# INTRODUCTION

# 1.0 INTRODUCTION

## 1.1 Project Setting

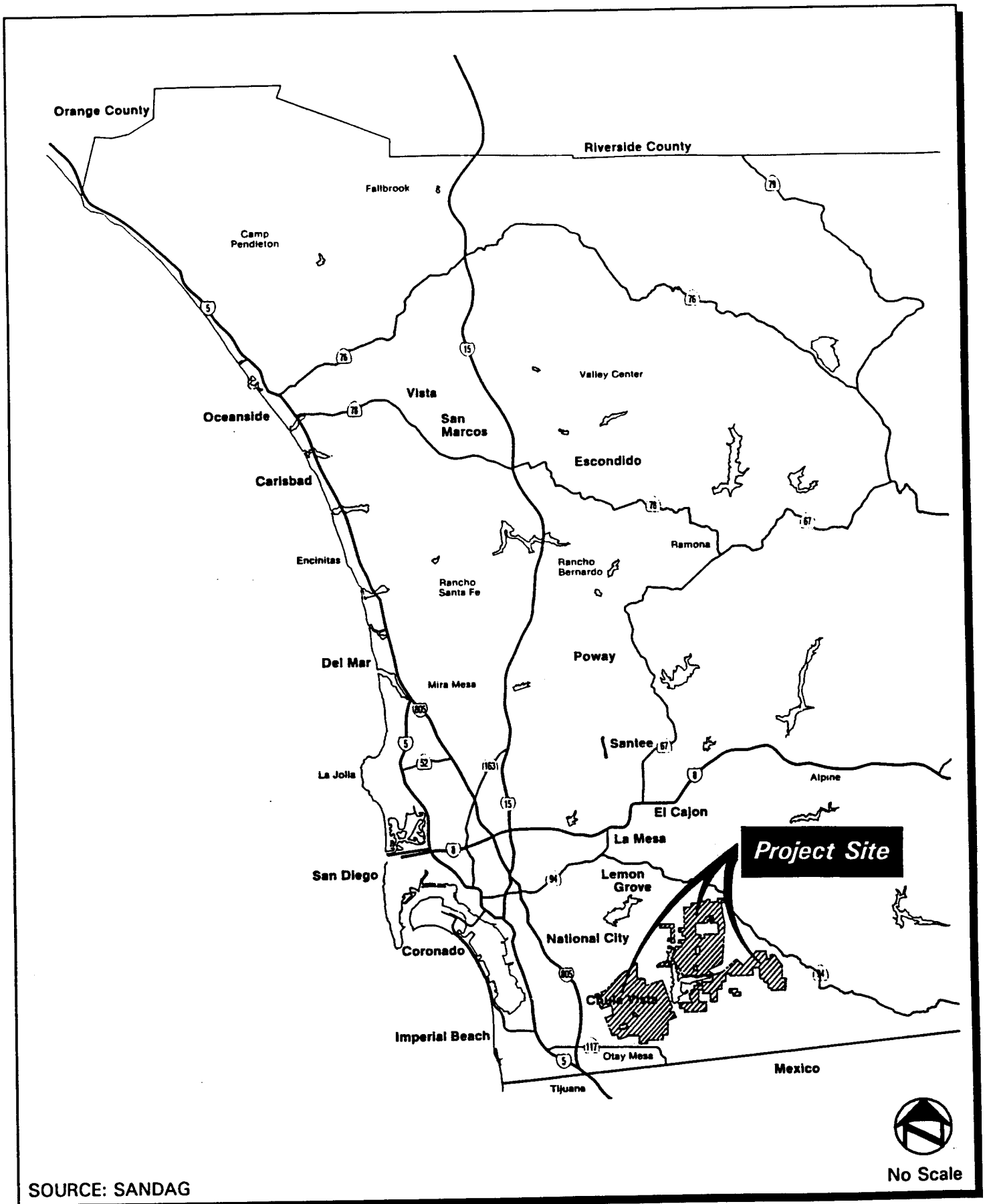
The Otay Ranch property is located in the unincorporated area of San Diego County immediately east of the City of Chula Vista (Figure 1). The 22,899-acre Ranch is the largest private undeveloped landholding in the County. Otay Ranch consists of three nearby but non-contiguous ownership areas generally surrounding Otay Lakes: the Otay Valley area (9,449 acres), the Proctor Valley/Jamul Mountains area (7,895 acres), and the San Ysidro Mountains area (5,555 acres). Each of these large ownership areas is an aggregate of many smaller existing legal parcels within the Ranch. The entire property now is being studied as the site for a new community that would provide substantial new housing, an urban center, resort destinations, and a variety of open space uses and habitat areas.

As part of an agreement between adjacent local governments, the City of Chula Vista and the County of San Diego will jointly process a General Plan Amendment (GPA) for the overall Otay Ranch property. Several planning and growth management considerations contributed to the decision to jointly process the Otay Ranch GPA, but key factors were the common City/County intentions relating to the need to plan comprehensively for the protection of open space, sensitive natural and cultural resources, and regional recreation opportunities. This Resource Management Plan (RMP) responds to joint City/County intent with respect to open space planning and resource protection.

## 1.2 RMP Purpose and Function

### 1.2.1 Purpose and Function

The primary purpose of the RMP is to serve as the functional equivalent of the County Resource Protection Ordinance (RPO) for Otay Ranch. The RMP is intended to provide for protection




SOURCE: SANDAG

Phase 1 Otay Ranch RMP

**Regional Map**

FIGURE 1

of resources qualitatively equivalent to that which would occur under RPO. The relationship of the RMP to RPO is described in detail in the Preface of this document and in Section 1.3.2 of this chapter. The RMP differs from RPO, however, in two important aspects: 1) assurance of long-term resource protection, restoration and enhancement through creation of a permanent Management Preserve (the Preserve) under the direction of a qualified Preserve Owner/Manager; and 2) provision of significant new opportunities within the Preserve for onsite research and for teaching South County residents and visitors to understand, enjoy, and protect our natural heritage. It is recognized that all of the sensitive resources within Otay Ranch are not located within the Preserve. Certain resources will be lost in conjunction with development. However, associated with the loss of resources will be preservation of the most sensitive resources on Otay Ranch along with management, restoration, and educational activities.

A single unifying goal has been established for the RMP. Comprehensive objectives, policies and guidelines have been developed consistent with the RMP goal. This goal, along with the objectives, policies, and guidelines, are presented in Chapter 3 of this document.

### 1.2.2 RMP Vision

A single "vision" captures the spirit and intent of the RMP: the Otay Ranch Preserve should be designed to function as a "living museum" to protect sensitive natural and cultural resources and to increase public awareness and appreciation of these sensitive resources under the stewardship of an experienced Preserve Owner/Manager. This concept focuses on creation of a Management Preserve incorporating three key elements:

### 1) Resource Protection and Management

The Preserve will:

-- provide large, connected natural areas with varied habitats that offer refuge, food and shelter to multiple species of native plants and animals;
-- protect scenic, paleontological, and cultural resources; and
-- provide management tools to assure that Preserve resources are not adversely affected by urban development located adjacent to the Preserve.

### 2) Research

The Preserve will provide a unique and multi-faceted living laboratory for research related to:

-- habitat, paleontological, and cultural resource protection and management;
-- experimental approaches to enhancing and restoring degraded habitats;
-- understanding species and habitat needs and conditions that adversely affect sensitive plant and animal species.

### 3) Public Education and Appreciation

The Preserve will provide carefully controlled opportunities, consistent with resource protection needs, for the public to learn about and appreciate the natural and cultural diversity of the area, including:

-- its biological diversity and cultural heritage;
-- the inter-relationships between sensitive species and natural habitats;

-- the opportunity to observe biological and cultural resources in their natural setting;
-- the importance of preservation of natural areas and understanding challenges to the survival of remaining natural ecosystems.

The role envisioned for the Preserve will be to provide public benefits typically associated with great museums; however, the Preserve will be more than a museum. Museums present artificial depictions of natural systems and cultural artifacts because they no longer exist in nature or because they are too remote or sensitive for public visitation. The proposed Otay Ranch Preserve will feature functioning habitats and cultural resource exhibits in their natural settings. Not all parts of the Preserve will be suited to public access and use. But through the careful siting of trails, an interpretive center, botanical gardens, and research projects, the Preserve offers an opportunity to create a truly unique public educational and research resource.

The Preserve will differ considerably from traditional museums. It will be open and exposed, with "exhibits" featuring expansive areas where plants and animals interact in a natural manner, and where visitors can experience natural ecological systems and cultural resources in protected natural settings. Because it will be an enjoyable learning experience, people will return often and the educational values of the Preserve will be maximized. The Preserve will bestow environmental and educational benefits upon the South County for decades to come as area residents and visitors enjoy the Preserve and its educational programs. Clearly, the Preserve will contribute to a growing public awareness and appreciation of the need for careful stewardship of our remaining natural areas. Opportunities to effectively impart these lessons are rare and should not be missed.

## 1.3 Planning Context

### 1.3.1 Relationship to Otay Ranch General Plan Amendment

Implementation of development proposals for Otay Ranch will require General Plan Amendments (GPAs) and other land use changes to modify current General Plan land use designations and use regulations. In conjunction with the GPA, a General Development Plan (GDP) for the City of Chula Vista and a Subregional Plan for the County for San Diego also are being processed for Otay Ranch.

As described in Section 1.4 of this chapter, the RMP is being prepared in two phases. This Phase 1 RMP is being prepared and processed concurrently with the GPA/GDP/Subregional Plan for Otay Ranch. Phase 2 of the RMP will be prepared and processed in conjunction with the first SPA/Specific Plan for Otay Ranch. The policies and programs of the RMP established during Phases 1 and 2 will be implemented during the buildout of Otay Ranch.

As part of the public approval process for Otay Ranch, it is anticipated that land use plans currently under consideration for Otay Ranch will be reviewed and modified before the final land use plan emerges. The Phase 1 RMP ultimately to be approved in conjunction with the GPA/GDP/Subregional Plan for the Otay Ranch project will conform to and carry out the provisions of the final land use plan approved for the Ranch as a part of the General Plan Amendment process.

### 1.3.2 Relationship to RPO

The RMP is being prepared to fulfill the requirements of the County of San Diego Resource Protection Ordinance (RPO). In May of 1989, the San Diego County Board of Supervisors

adopted the RPO. The purpose of the Ordinance is to protect the County's wetlands, floodplains, steep slopes, sensitive biological habitats, and prehistoric and historic sites and to guarantee the preservation of these sensitive lands. Article V of the Ordinance provides for exemptions from the Ordinance. Section 9 of Article V specifically exempts any project within the Otay Ranch property from the RPO as follows:

> Any project located within the approximately 22,500-acre (sic) property known as "Otay Ranch," if determined to be consistent with a Comprehensive Resource Management and Protection Program which has been adopted by the Board of Supervisors for the "Otay Ranch."

Discretionary actions subject to the RPO include planning actions such as tentative maps, parcel and major use permits. Long range planning actions such as the GPA/GDP/Subregional Plan currently being processed for Otay Ranch are not subject to the RPO. According to guidelines prepared by County staff:

> "General Plan Amendments and Specific Plans are omitted from the RPO because they do not provide the indepth, site specific design necessary to apply the regulation." (Staff Guidelines for RPO, Part II, Section C.2.a.[1], at page 9, August 1991.)

Resource-based analyses, however, are highly desirable at the GPA and the Specific Plan stage to ensure that future planning actions such as tentative maps, parcel maps, and major use permits will be compatible with the RPO. An RPO-based resource analysis has been completed for Otay Ranch and is described in the Preface to this document. This analysis provides the type of resource-based analysis useful in the early planning stages of a project and facilitates staff review of the RMP, that, according to the RPO's statements for Otay Ranch as noted above, should offer resource protection equivalent to that which would be provided under RPO.

### 1.3.3 Relationship to Otay Ranch EIR

The RMP addresses a variety of resources currently being analyzed in the Otay Ranch Program EIR which is being prepared for the GPA/GDP/Subregional Plan currently in process. Resources addressed in the RMP that are analyzed in the Program EIR include: biological resources, cultural resources, paleontological resources, floodplains, agriculture, and steep slopes. In many cases, the objectives, policies and standards presented in the RMP form the basis for mitigation measures presented in the Program EIR. While the RMP presents policies and programs for the protection and enhancement of sensitive resources, the Program EIR with its associated statutory requirements, provides the vehicle for assuring that the policies and programs included in the RMP are carried out.

### 1.3.4 Relationship to State and Federal Programs and Priorities

A number of State and Federal programs, statutes, and regulations are relevant to the planning for the Otay Ranch RMP. The following list is not exhaustive but it indicates many of the State and Federal programs and concerns that are addressed in the RMP.

-- The California Department of Fish and Game's Section 1600 permit program protects streams from unauthorized alterations;

-- The Federal Clean Water Act Section 404 permitting process sets forth specific criteria and standards for the protection of wetlands, streams, and other "waters of the United States;"

-- Both the State and Federal governments enforce a "no net loss" policy in reviewing proposals that could impact wetlands;

-- Both the State and Federal Endangered Species Acts identify and protect certain species of plants and animals; and

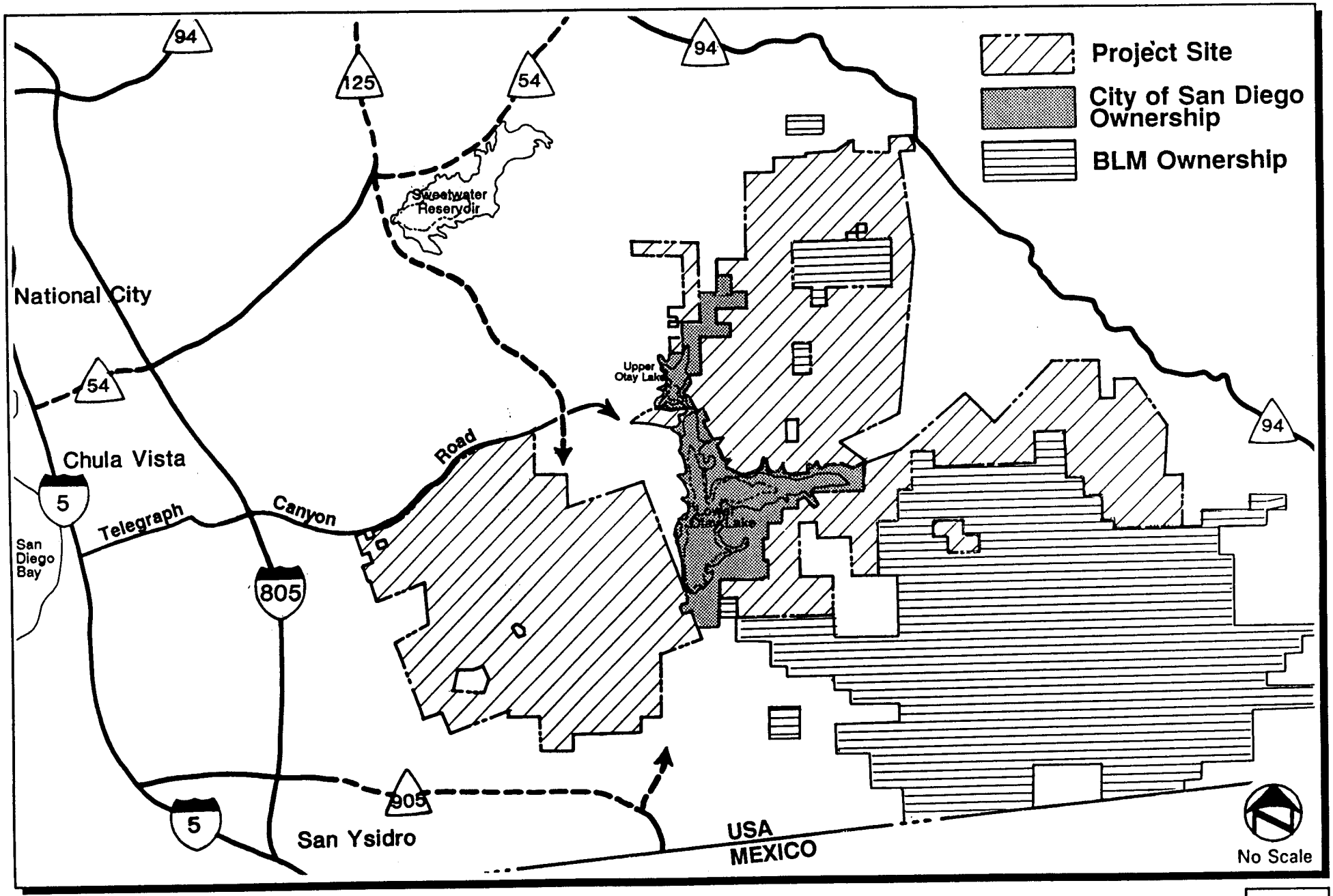
-- State and Federal programs, such as the State Historic Preservation Office and the National Register Program, protect historic and pre-historic resources.

-- San Diego County Environmental Review Procedures, the San Diego County Archaeological/Historical Report Procedures, and Appendix K of the California Environmental Quality Act.

The RMP has been formulated to work in concert with these State and Federal regulatory programs. Input from State and Federal agencies was obtained early in the planning process prior to local approvals. The RMP will assist in the coordination of resource agency permitting throughout the implementation phases of Otay Ranch. Policies 9.1-9.4, presented in Chapter 3 of this document, have been prepared to define the relationship of the RMP to resource agency permitting requirements. In particular, Policy 9.2 encourages negotiation of a Memorandum of Agreement (or separate memoranda) with the resource agencies concurrent with the Phase 2 RMP.

### 1.3.5 RMP in the Regional Context

The three major parcels of the Otay Ranch (i.e., Otay River parcel, Proctor Valley parcel, and San Ysidro Mountains parcel) together comprise a substantial percentage of the undeveloped land remaining in southwestern San Diego County (Figure 2). Otay Ranch surrounds the 2,900-acre City of San Diego property adjacent to and including Upper and Lower Otay Lakes, and a portion of the Ranch lies immediately to the north of the 20,000-acre BLM Otay Mountain Management Area. These three ownerships combined (i.e., Otay Ranch, City of San Diego, and BLM) total nearly 45,000 acres of contiguous undeveloped land that provide habitat for



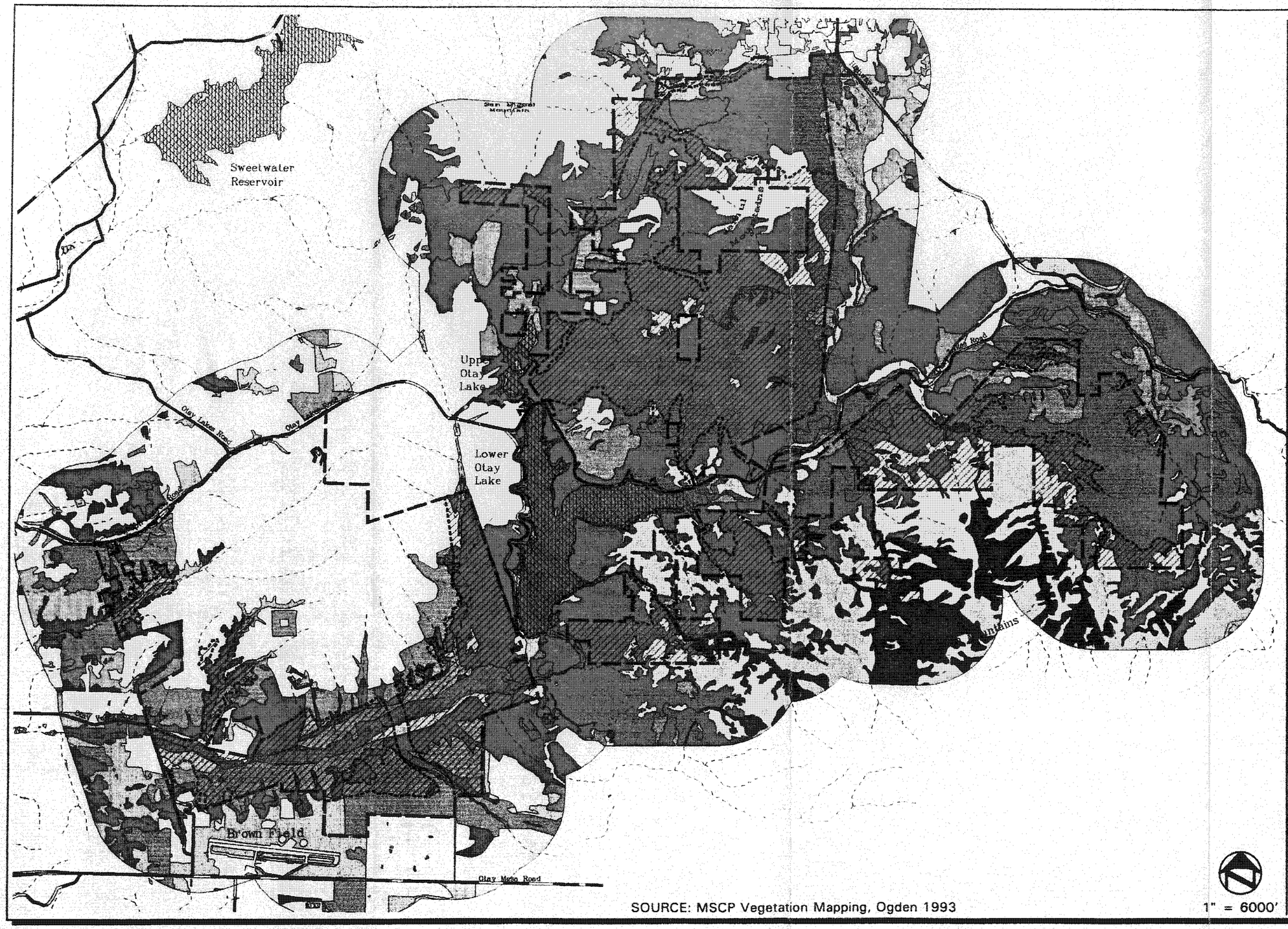

Phase 1 Otay Ranch RMP

**Vicinity Map**

FIGURE 2

numerous species of plants and animals, function as corridors for wildlife movement throughout the region, and contribute to regional biodiversity and natural ecosystem functions. Much of the Otay Ranch property and portions of the BLM property historically have been used for agriculture and grazing.

It is evident from the recently prepared "South Coast Planning Area Draft Resource Management Plan and Environmental Impact Statement" that the Bureau of Land Management has begun to emphasize the preservation of sensitive biological resources that exist within its extensive southern California holdings. Consequently, it is likely that substantial portions of the BLM Otay Mountain Management Area will remain as natural open space. Likewise, a significant portion of the City-owned property surrounding Otay Lakes likely will remain undeveloped. The contribution of approximately one-half of the acreage of Otay Ranch brings the total number of potential open space acres in this region to nearly 32,000 acres. In addition, mitigation parcels associated with the development of Hidden Valley Estates, The Pointe, and San Miguel Ranch provide potential linkages through San Miguel Mountain to the Sweetwater River drainage. The Sweetwater-Loveland Open Space and Habitat Management Plan identifies a major linkage from the Sweetwater Reservoir through to the McGinty Mountain area. The McGinty Mountain area encompasses large tracts of undeveloped land, including an existing Nature Conservancy Preserve and adjacent high quality native plant and wildlife habitat that currently is being investigated for future "mitigation banking" opportunities. Open space and/or linear regional parks are planned for both the Otay and Sweetwater River Valleys. The existence of these large blocks of natural open space represents the opportunity for the establishment of an interconnected network of natural communities that together may function as a large, self-sustaining preserve system. Figure 3 shows the vegetation in the region with Otay Ranch overlaid for reference. The vegetation map was prepared for the San Diego Clean Water Program using aerial photography.




## LEGEND

- Coastal Sage Scrub
- Chaparral
- Grassland
- Riparian/Wetlands
- Oak Woodland
- Coniferous Forest
- Disturbed Habitat
- Developed
- Management Preserve Area

**Note:**

This vegetation map is based on aerial photograph interpretation completed for the City of San Diego Multiple Species Conservation Program. The vegetation impact analysis in the Otay Ranch Program EIR is based on project-specific vegetation field data. Some inconsistencies may exist between data sets.

SOURCE: MSCP Vegetation Mapping, Ogden 1993

1" = 6000'

Phase 1 Otay Ranch RMP

# Otay Ranch Vegetation Communities

FIGURE 3

In San Diego County, conservation planning efforts on a regional level recently have accelerated, driven primarily by the federal listing of the California gnatcatcher as threatened and efforts to preserve its coastal sage scrub habitat. It is the intent of such planning efforts to reduce the need for future listings of sensitive species that occur in this habitat. This new emphasis on regional conservation is manifested in the current proliferation of habitat management and conservation plans such as the San Diego Clean Water Program's Multiple Species Conservation Plan (MSCP), the City of Carlsbad's Habitat Management Plan (HMP), the North County Wildlife Forum's Multi-Habitats Conservation Plan (MHCP), and similar studies currently underway or completed by the cities of Oceanside, Poway, and Escondido. The Otay Ranch/Otay Lakes/BLM combined areas lie immediately adjacent to the eastern edge of the Metropolitan Sewerage System Service Area. Hence, these combined ownerships represent a significant eastward extension of the open space and regional conservation planning efforts currently sponsored by the Clean Water Program (i.e., the MSCP). When the results of current conservation efforts eventually are assembled and synthesized, the entire western and southwestern portions of San Diego County will have been studied thoroughly and will contribute significantly to open space planning throughout San Diego County.

In 1991, the State of California adopted Assembly Bill 2172 that enables the development of Natural Community Conservation Programs (NCCP). The bill describes how the California Department of Fish and Game will participate in sensitive biological resource management consistent with the Federal Endangered Species Act. The 4d Rule published by the USFWS in conjunction with the listing of the California gnatcatchers as a threatened species offers preparation and implementation of a NCCP in accordance with the 1991 Act to allow take of coastal sage scrub habitat. Incidental species take provisions are also incorporated in Section 7 and 10 of the federal Endangered Species Act. Property owners in the City of Chula Vista and the southwestern portion of the County of San Diego are currently investigating the possibility of establishing a subregional NCCP for the South County area. The Otay Ranch Preserve would be designed, implemented, and managed in such a way as to contribute to this South County Subregional NCCP.

## 1.4 Preparing the RMP in Phases

This report constitutes the first phase of a two-phase RMP process for Otay Ranch, and is being processed by the City and County as part of the Otay Ranch General Plan Amendment. Phases 1 and 2 of the RMP are planning documents subject to discretionary review and approval - Phase 1 with the GPA/GDP/Subregional Plan and Phase 2 with the first SPA/Specific Plan. Implementation of RMP policies and programs following approval of the Phase 1 and Phase 2 documents will be ongoing during the buildout of Otay Ranch.

The proposed RMP phasing reflects the scale of the Otay Ranch study area (22,899 acres), the diversity and complexities of its natural systems, and the length of the buildout period for Otay Ranch (30 years). Due to the long lead time necessary to assemble a comprehensive data base and carry out pilot studies, no plan completed at the very beginning of such a lengthy and complex planning process could assure effective long-term management of sensitive resources for the entire property. Therefore, a two-phased approach is proposed for the RMP to ensure that information from ongoing investigations and site specific studies can be incorporated into the RMP as it becomes available; Phase 2 RMP will reflect this more specific information. The two-phased RMP process and its relationship to the ongoing approval process for Otay Ranch is described in detail below and summarized in Table 1.

### -- Phase 1 RMP and Approval of a General Plan Amendment

The Phase 1 RMP provides the initial framework for the Phase 2 RMP and for subsequent implementation of the Resource Management Plan. The following has been done as part of Phase 1.

## TABLE 1
## RMP PROGRAM AND PHASING SUMMARY

### PHASE 1 RMP - COMPLETED AND SUBMITTED AS A PART OF THE GENERAL PLAN AMENDMENT

1. Identify sensitive resources;
2. Identify a conceptual preserve boundary;
3. Design the preserve to maximize protection of multiple species and resources;
4. Identify necessary RMP studies and research;
5. Establish comprehensive, coordinated resource protection, enhancement, and restoration policies;
6. Identify permitted uses and guidelines for locating such uses within the Preserve;
7. Identify the qualifications, responsibilities and selection process for the Preserve Owner/Manager;
8. Identify the content of remaining phase of RMP.
9. Formulate RMP Implementation Programs for:
   - -- Resource protection, enhancement, and restoration
   - -- Monitoring the effectiveness of RMP implementation.

### PHASE 2 RMP - COMPLETED AND SUBMITTED WITH THE FIRST SPA PLAN OR SPECIFIC PLAN FOR OTAY RANCH

1. Conduct resource studies and related research;
2. Select a Preserve Owner/Manager;
3. Commence implementation of RMP programs for:
   - -- Conveyance of acreage to Preserve Manager
   - -- Resource protection, enhancement, and restoration
   - -- Funding
   - -- Monitoring the effectiveness of RMP implementation;
4. Refine the Preserve boundary based on completed studies/research;
5. Develop conceptual infrastructure plans for facilities located within or across the Preserve;
6. Identify locations of permitted uses within the Preserve.

### IMPLEMENTATION OF THE RMP DURING THE BUILDOUT OF OTAY RANCH

As required, for each SPA/Specific Plan:

- -- Implement enhancement and restoration plans;
- -- Continue and complete long-term research;
- -- Provide educational and interpretive facilities and programs;
- -- Monitor for overall RMP compliance and progress;
- -- Assure compliance with RMP policies and standards;
- -- Carry out phased conveyance of parcels to the Preserve ;
- -- Provide for phased funding of RMP programs.
- -- Convey parcels to the Preserve.

1. Identification of sensitive and significant biological, cultural, paleontological, and scenic resources within Otay Ranch. Approximately 6,100 acres of the 22,899-acre project site have been surveyed for cultural resources. For the present, all cultural resources are considered to be significant until Phase 2 of the Resource Management Plan has been completed. During Phase 2, the entire property will be surveyed for cultural resources, and all resources will be evaluated for significance under the California Environmental Quality Act and San Diego County Guidelines.
2. Identification of a Preserve that is sized and configured to protect the most sensitive natural and cultural resources located within the study area, including representative areas for all of the existing habitats and sustainable populations representing all of the existing onsite sensitive plant and animal taxa.
3. Design a preserve to maximize opportunities for multiple-species habitat management and protection, including provisions for linkages to offsite natural areas.
4. Identification of biological, cultural, and paleontological studies and research programs necessary for resource protection and enhancement, including the identification of restorable areas and establishment of criteria for restoration programs to be carried out in Phase 2 RMP.
5. Establishment of a comprehensive set of objectives, policies, and guidelines for the preservation of sensitive resources, establishment of functional biological connections, provide for effective management of the Preserve, and interim land uses.
6. Identification of permitted uses within the Preserve and guidelines for locating such uses.
7. Identification of the qualifications, responsibilities, and selection process for the Preserve Owner/Manager.
8. Identification of the content of Phase 2 of the RMP.
9. Identification of conceptual restoration and monitoring plans.

The underlying purpose of Phase 1 is to initiate an overall RMP process that will set aside areas that are sized and configured to be managed effectively for habitat protection. Phase 1 of the

RMP process is concluded when the City and County approve the GPA, including a mutually acceptable Phase 1 RMP, and certify the Program EIR for Otay Ranch.

-- **Phase 2 RMP and Approval of Specific Plan/SPA Plans**

Phase 2 continues the RMP process following approval of the Otay Ranch GPA and Phase 1 RMP, and certification of the Program EIR by the City and County. Whereas Phase 1 establishes the framework for the RMP, the Phase 2 RMP translates Phase 1 policies into specific action programs. The Phase 2 RMP will define specifically how the adopted Phase 1 policies will be implemented. Additional required scientific studies and more precise facility plans expected to be available as the planning process for Otay Ranch progresses will facilitate this effort. The Phase 2 RMP will accomplish the following:

1. Initiation and/or completion of biological and cultural resource studies required by Phase 1 policies (some studies may extend beyond approval of the Phase 2 RMP). Phase 2 biological and cultural resource study findings will be incorporated into the Phase 2 RMP.
2. Selection of the permanent Preserve Owner/Manager with the expertise necessary to effectively manage sensitive Preserve resources.
3. Implementation of RMP programs, including:
   - -- Required logical and effective sequence of Preserve conveyance;
   - -- Required habitat enhancement, restoration and re-establishment measures;
   - -- Establishment of reliable sources of long-term funding to support and implement RMP management, research, education/interpretive, and public access programs;
   - -- Establishment of monitoring programs to analyze and verify the incremental and long-term conformance of RMP implementation with related RMP objectives, policies and standards.

4. Refinement of the Preserve boundary based on completion of biological and cultural resource studies planned or in progress.
5. Development of conceptual infrastructure plans providing specific standards and criteria for facilities located within or across the Preserve.
6. Identification of locations for permitted uses within the Preserve including trails, active recreation and educational and interpretive facilities.

Phase 2 of the RMP process will be concluded when the first SPA/Specific Plan for Otay Ranch is approved. At this point, all RMP resource protection, management and funding mechanisms will be established and the stage will be set for RMP implementation to begin.

-- **RMP Implementation and Approval of Subsequent Otay Ranch Specific Plans, Tract Maps, and Individual Permits**

Implementation of the RMP begins after the first Specific Plan/SPA Plan is approved by the City and County and will continue during buildout of Otay Ranch. It involves: (1) the phased conveyance of acreage designated for inclusion in the Preserve to the permanent Preserve Owner/Manager; (2) implementation of enhancement, and restoration plans; and (3) funding for RMP implementation. As each Otay Ranch Specific Plan or SPA Plan is approved by the City or County, it will be conditioned in conformance with the provisions of the Phase 1 and Phase 2 RMP to require: (1) phased conveyance of acreage to the owner of the Preserve; and (2) funding, and/or in-kind construction/services, related to Preserve resource protection/ enhancement/restoration activities. These features will be described in the text of each SPA/Specific Plan and/or in the conditions of approval for each SPA/Specific Plan requirements. Typically, RMP acreage transfers, payment of RMP fees, other required funding, or completion of in kind services or related infrastructure facilities would be phased and linked to the issuance of building permits for the first final map within each SPA or Specific Plan area to assure that

development proceeds in an orderly manner consistent with protection of RMP resources. Assessment programs (such as landscape maintenance district or assessment district) would need to be completed to set up prior to issuance of building permits for the first final map in each SPA.

RMP implementation will continue throughout much of the buildout of Otay Ranch. Gradually, the focus of the RMP will shift from acquisition, implementation, and construction of the Preserve components, to maintenance and operation of the Preserve. Protection of resources always will be a priority.

# CHAPTER 2

# RESOURCE PROTECTION FRAMEWORK

# 2.0 RESOURCE PROTECTION FRAMEWORK

## 2.1 Existing On-Site Character

Since 1985 the Otay Ranch property has been the subject of intensive field investigations. The goal of this work was to develop an understanding of the quality and quantity of existing biological and cultural resources onsite and to identify historical and current uses of the property. These studies focused on the accumulation of biological, landform, cultural, and paleontological data through extensive field reconnaissance and literature review. Identification of the conceptual preserve described in Chapter 5 of this document is based to a great extent on the findings and conclusions of these studies.

**Biological Resources**

A brief history of the survey work conducted on the 22,899-acre Otay Ranch follows. In 1986, under contract to the previous landowner (United Enterprises), Advanced Sciences, Inc. (ASI) completed botanical and zoological surveys of varying levels of detail on most of the Otay Ranch property. In 1989, the current landowner (Baldwin Vista Associates) engaged the services of Michael Brandman Associates (MBA) and RECON to conduct further detailed studies of the biological and cultural resources present on the site. MBA conducted surveys on the Proctor Valley parcel; RECON conducted surveys on the Otay River Valley and San Ysidro Mountains parcels. Initial studies conducted by MBA and RECON were completed in June 1989, and were reviewed and updated incorporating the results of field work completed in 1990 and 1991. Dudek & Associates, Inc. (DUDEK) was retained to conduct a thorough analysis of the flora and hydrology of vernal pools present on the entire Ranch (1990-1991). The vernal pool study is a requirement of the Phase 2 RMP. Detailed reports were submitted to the City and County by DUDEK, MBA and RECON as part of the GPA application. These reports, included as appendices to this document, include the following:

- Biological Resources Inventory Report for the Otay Ranch Property (RECON 1989, with 1991 update).
- Biological Resources Survey Report, Otay Ranch - Proctor Valley Area, San Diego County, California (MBA 1989).
- Sensitive Plant Species Survey Report, Otay Ranch - Proctor Valley/Jamul Mountains Area, San Diego County, California (MBA 1990).
- Botanical Resources Report for the Otay Ranch Property, Rare Plant Survey Results, Spring, 1990 (RECON 1990).
- Report on the Hydrology and Flora of the Otay Ranch Vernal Pools, 1990, San Diego County, California (DUDEK 1992). (A technical study required for the Phase 2 RMP).
- Baldwin Otay Ranch Wildlife Corridor Study: Phase 1 Report (Ogden 1992). (Preliminary results of a comprehensive technical study required for Phase 2 of the RMP).
- Baldwin Otay Ranch Raptor Study (Ogden 1992)
- Responses to "Data Gaps" Identified by the Otay Ranch Biological Subcommittee (DUDEK 1991). (Required for the Otay Ranch Program EIR).

Several additional biological studies are planned in conjunction with the Phase 2 RMP as described in Chapter 3, Policy 1.2.

The cumulative data from previous biological surveys indicate that approximately 70 percent of the Otay Ranch property supports native plant communities with varying levels of sensitivity, quality and disturbance, some of which are recognized as sensitive habitats by the County and the California Department of Fish and Game (CDFG). The remaining 30 percent of the property is highly disturbed due to historical and ongoing agricultural and ranching activities. Detailed maps illustrating the distribution of vegetational communities, sensitive plant species, and sensitive wildlife species are presented in the biological assessments of the Ranch included in Appendix A (i.e., RECON 1989, 1990, 1991; MBA 1989, 1990; DUDEK 1991 a, b). Habitat

types present on the Ranch as identified in the Final Program EIR for Otay Ranch (Ogden 1992, Table 3.3-1) include:

-- Diegan coastal sage scrub (10,364 acres)*;
-- Disturbed Diegan coastal sage scrub (761 acres)*;

-- Maritime succulent scrub (285 acres)*;
-- Chamise chaparral (1,441 acres);
-- Southern mixed chaparral (1,226 acres);
-- Baccharis scrub (19 acres);
-- Baccharis floodplain scrub (113)*;
-- Tamarisk scrub (396 acres)*;
-- Valley needlegrass grassland (49 acres)*;
-- Disturbed valley needlegrass grassland (215 acres);
-- Non-native grassland (1,846 acres);
-- Alkali meadow (138 acres)*;
-- Disturbed alkali meadow (12 acres)*;
-- Coast live oak woodland (181 acres)*;
-- Southern coast live oak riparian forest (75 acres)*;
-- Sycamore alluvial woodland (7 acres)*;
-- Southern interior cypress forest (165 acres)*;
-- Southern willow scrub (14 acres)*;
-- Eucalyptus (33 acres);
-- Otay Mesa vernal pool (acreage included in other habitat types)*;
-- Coast and valley freshwater marsh (3 acres)*;
-- Aquatic (3 acres)*;

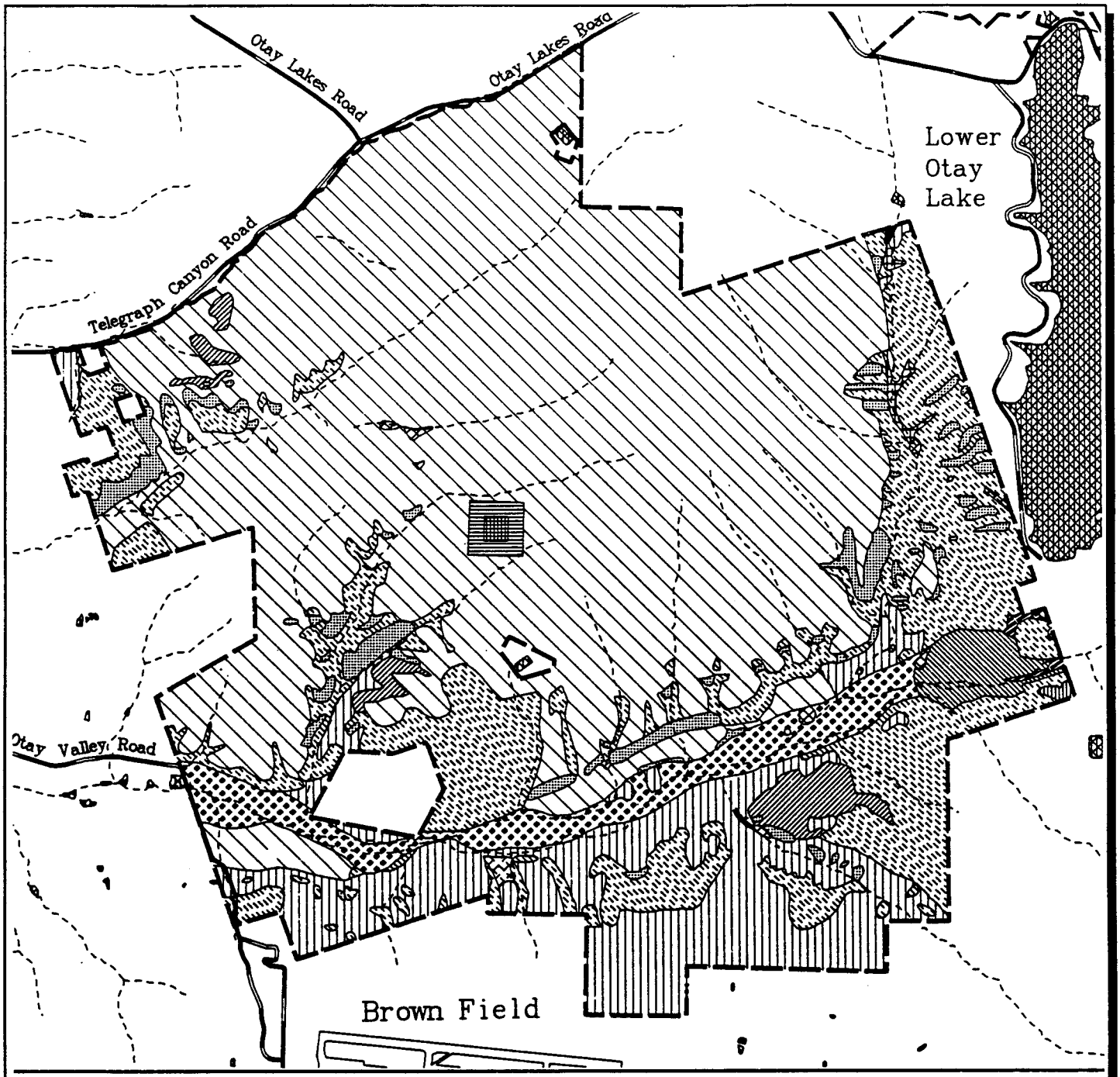
-- Agriculture (5,445 acres);

-- Developed (108 acres).

* denotes habitats identified as sensitive by local and regional resource agencies.

The Final Program EIR for Otay Ranch concludes that approximately 12,566 acres of the Ranch contain sensitive habitats, not all of which support rare, threatened, or endangered plant and/or wildlife species (Ogden 1992). Most of these habitats are considered sensitive primarily because they represent important natural habitat for a variety of plant and animal species. Existing vegetation on the Otay Ranch property as mapped by MBA/RECON (1989) is shown in Figure 4.

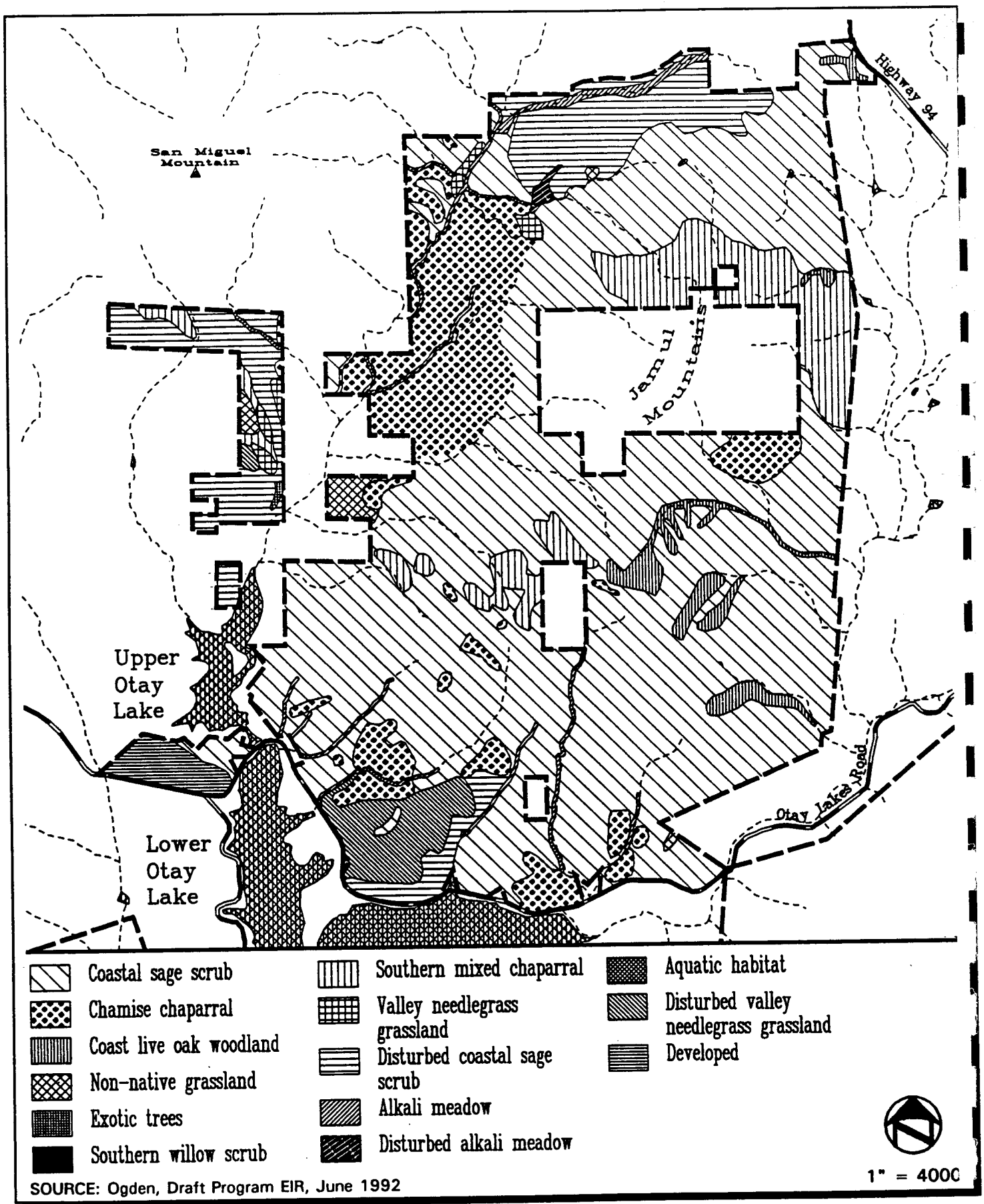
Several wildlife species recognized as sensitive by the California Department of Fish and Game and the U.S. Fish and Wildlife Service are present on Otay Ranch. The State and Federally-listed least Bell's vireo (*Vireo bellii pusillus*) probably occurred historically in the Otay River Valley, and there are at least two recent sightings of this summer resident species in the valley. Least Bell's vireo also was observed in 1989, 1990, and 1992 in the Dulzura Creek drainage adjacent to Otay Ranch east of the Lower Otay Lake, where it occurs in high densities. A large, regionally significant population of the California gnatcatcher (*Polioptila californica californica*), a species recently proposed for endangered status by USFWS, is present on the Ranch, concentrated in the Otay Valley parcel but distributed throughout coastal sage scrub on the ranch (approximately 150,000 acres of coastal sage scrub occurs in San Diego County). At least ten Federal Category 2 candidate wildlife species are present, including Bell's sage sparrow (*Aimophila belli belli*), southern California rufous-crowned sparrow (*Aimophila ruficeps lambi*), California horned lark (*Eremophila alpestris actia*), San Diego black-tailed jack rabbit (*Lepus californicus bennettii), red-diamond rattlesnake (Crotalus ruber ruber*), San Diego horned lizard (*Phrynosoma coronatum blainvillei*), orange-throated whiptail lizard (*Cnemidophorus hyperythrus beldingi*), Hermes copper butterfly (*Lycaena hermes*), Quino checkerspot butterfly (Euphydryas




Phase 1 Otay Ranch RMP

# Existing Vegetation (Sheet 1)

FIGURE 4

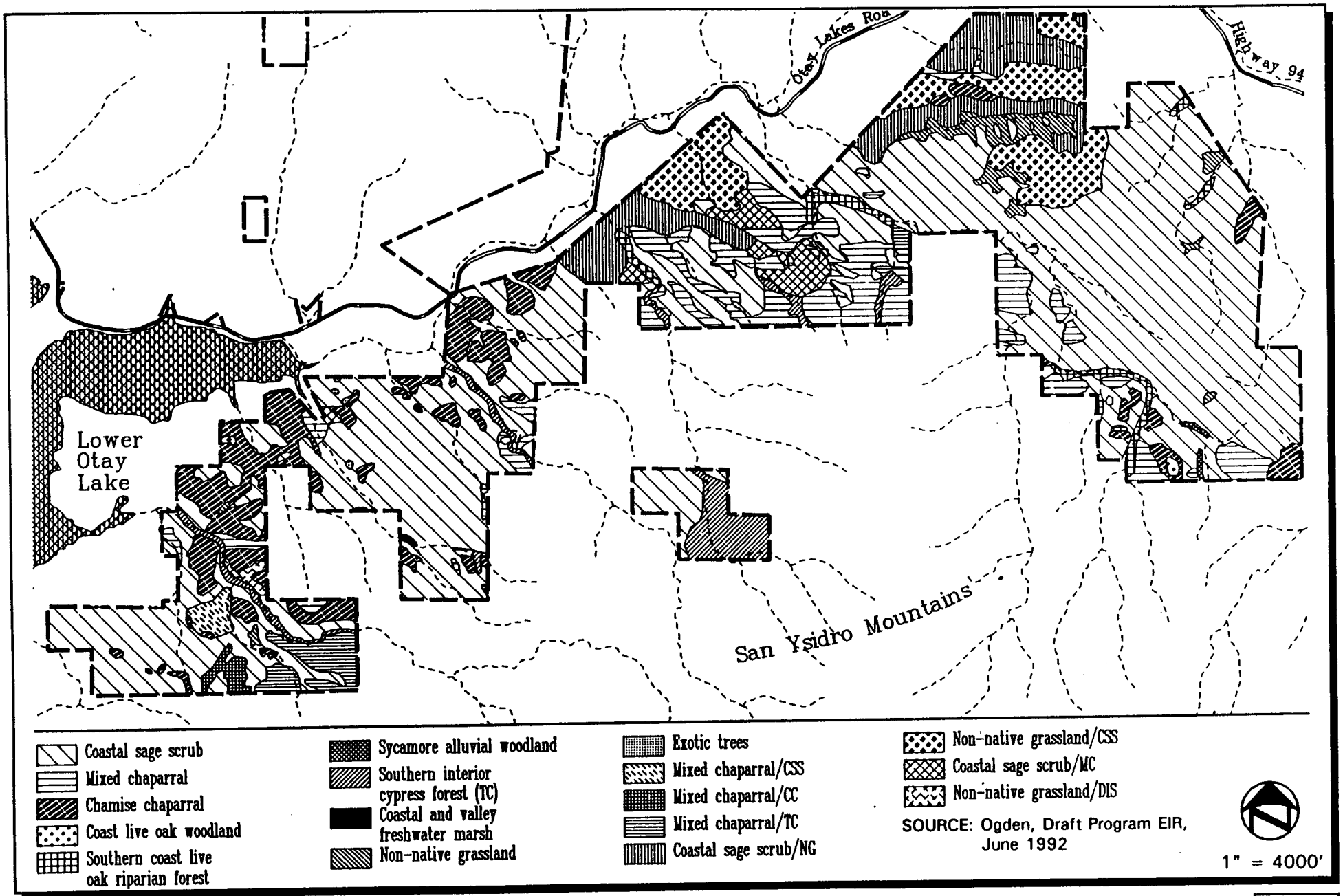



SOURCE: Ogden, Draft Program EIR, June 1992

Phase 1 Otay Ranch RMP

**Existing Vegetation (Sheet 2)**

FIGUR 4




Phase 1 Otay Ranch RMP

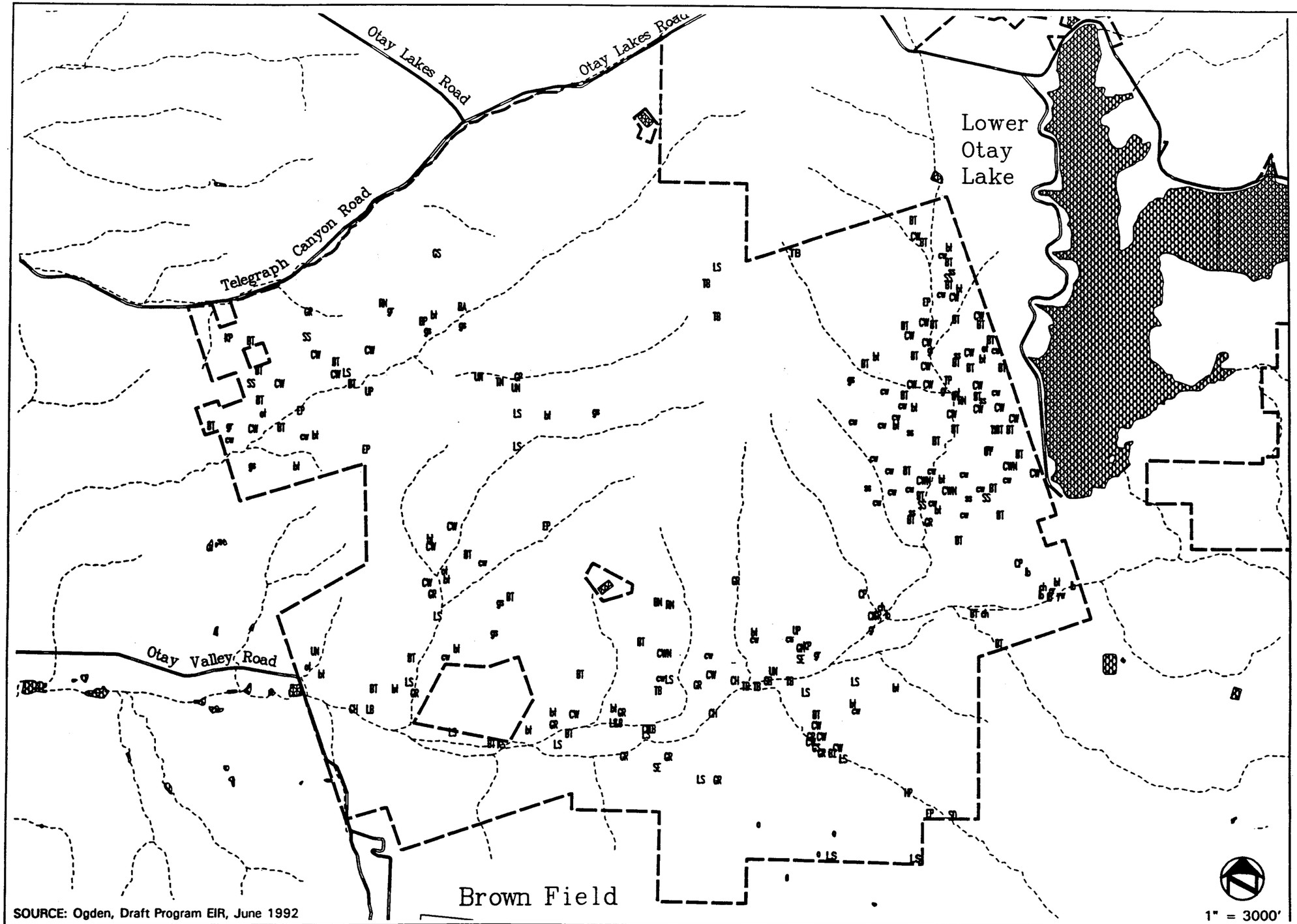
**Existing Vegetation (Sheet 3)**

FIGURE 4

*editha quino*), and Thorne's hairstreak butterfly (*Mitoura thornei*). All but Quino checkerspot have been detected during recent survey work on the Ranch. The rufous-crowned sparrow, sage sparrow, and jack rabbit are fairly common on the ranch and throughout the region in scrub habitats; the horned lark is locally common in some grasslands onsite. The distribution and abundance of the three reptiles on the ranch cannot be assessed accurately because these species are difficult to detect. Of the three butterflies, Thorne's hairstreak is a narrow endemic restricted to Tecate cypress, Hermes copper is distributed in much of cismontane San Diego County, and Quino checkerspot apparently is locally extinct in San Diego County.

In addition to Federally-recognized species, several California Department of Fish and Game "Species of Special Concern" have been reported from the Ranch, including golden eagle (foraging only) (*Aquila chrysaetos*), cactus wren (*Campylorhynchus branneicapillus sandiegoensis*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus cyaneus hudsonius*), and Cooper's hawk (*Accipiter cooperi*). In contrast to the widely ranging raptor species, the cactus wren is highly restricted to cactus (*Opuntia* sp.) thickets in southern maritime scrub. The Otay Ranch population of this species represents a regionally significant resource. The Ranch provides extensive areas for raptor foraging, and represents habitat for mule deer, coyotes, bobcats, mountain lions, and numerous other wildlife species. The distribution of sensitive wildlife species on the Otay Ranch property, as mapped by MBA/RECON (1989/1990), is illustrated in Figure 5.

A large number of sensitive plant species are present on Otay Ranch. Three Federal Category 1 species have been recorded from the Ranch - San Diego button-celery (*Eryngium aristulatum* var. *parishii*), California Orcutt's grass (*Orcuttia californica*), and Otay Mesa mint (*Pogogyne nudiuscula*). The populations of Otay Mesa mint comprise greater than 90% of the southern California distribution of this species. Populations of San Diego button-celery are considerable, but are small compared to those on NAS Miramar. A single individual of California Orcutt's




SOURCE: Ogden, Draft Program EIR, June 1992

# Sensitive Animals

State and Federal Listed
- LB — Least Bell's vireo

Proposed for Listing
- BT — California black-tailed gnatcatcher
- CW — Cactus wren
- CWN — Cactus wren with active nest
- OT — Orange-throated whiptail

Protected
- KP — Black-shouldered kite perch

Candidate for Listing
- LS — Loggerhead shrike
- PT — Western pond turtle
- RB — Coastal rosy boa
- RC — Rufous-crowned sparrow
- SD — San Diego horned lizard
- SS — Sage sparrow
- TB — Tri-colored blackbird
- TS — Two striped garter snake

Species of Special Concern
- BA — American badger
- CH — Yellow-breasted chat
- CN — Cooper's hawk nest
- CP — Cooper's hawk perch
- EP — Golden eagle perch
- HP — Northern harrier perch
- O — Burrowing owl
- YW — Yellow warbler

Locally Sensitive
- BG — Blue-gray gnatcatcher
- BH — Black-crowned night heron
- BN — Common barn owl nest
- BP — Commonbarn owl perch
- GB — Great blue heron
- GH — Green-backed heron
- GS — Grasshopper sparrow
- SP — Red-shouldered hawk perch

Other Sightings of Interest
- BC — Bobcat
- GP — Great horned owl perch
- GR — Blue grosbeak
- KS — California king snake
- M — Mountain lion sign
- RN — Common raven nest
- RP — Raptor perch site
- RS — Probable raptor nest site
- SE — Snowy egret
- ST — Swainson's thrush
- TN — Red-tailed hawk nest
- TP — Red-tailed hawk perch
- UN — Unknown raptor nest
- UP — Unknown raptor perch
- VR — Verified raptor nest site

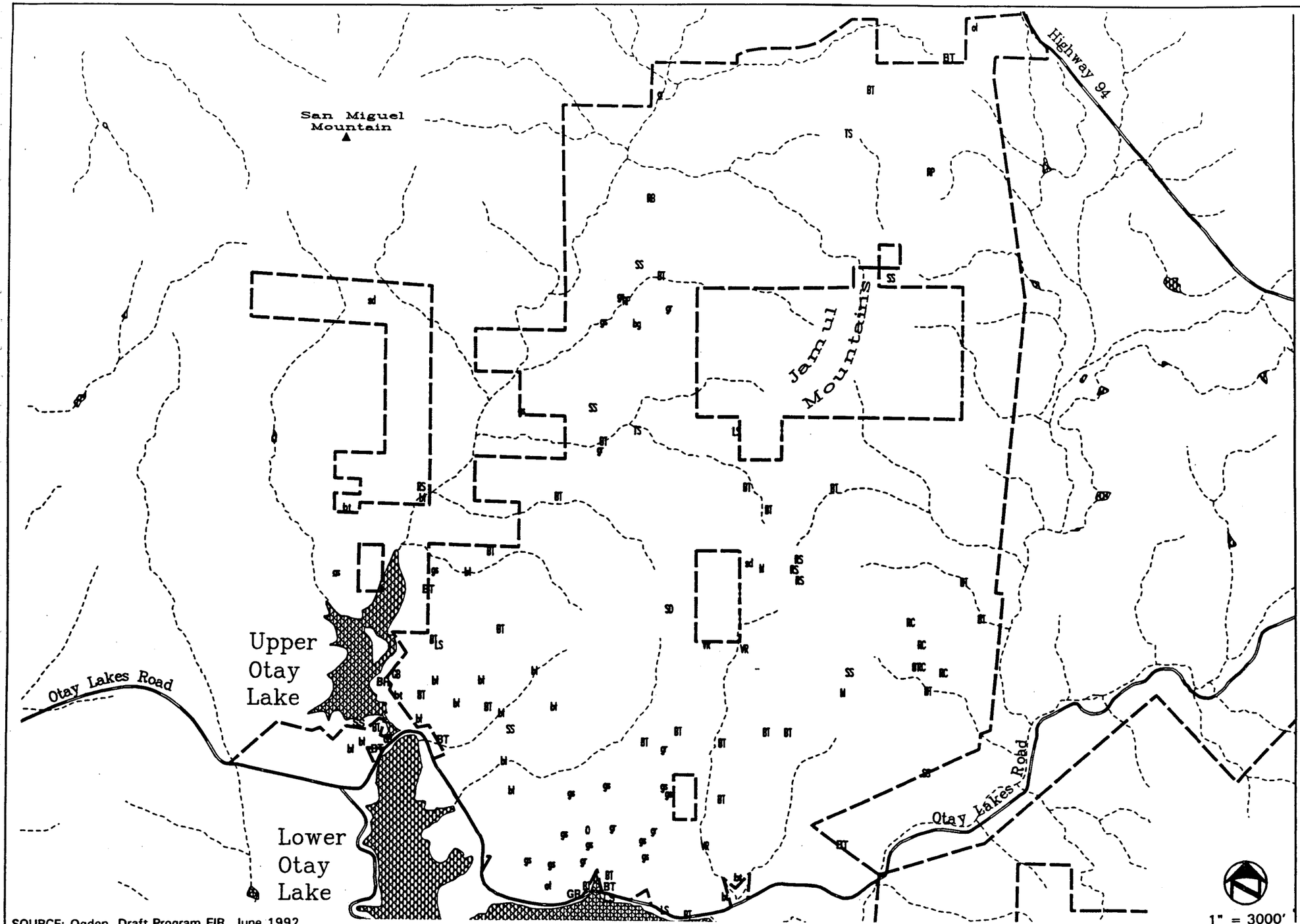
Lowercase letters indicate historic sightings

Uppercase letters indicate recent (1989 and later) sightings

Phase 1 Otay Ranch RMP

**Sensitive Animals (Sheet 1)**

FIGURE 5




SOURCE: Ogden, Draft Program EIR, June 1992

# Sensitive Animals

State and Federal Listed
- LB — Least Bell's vireo

Proposed for Listing
- BT — California black-tailed gnatcatcher
- CW — Cactus wren
- CWN — Cactus wren with active nest
- OT — Orange-throated whiptail

Protected
- KP — Black-shouldered kite perch

Candidate for Listing
- LS — Loggerhead shrike
- PT — Western pond turtle
- RB — Coastal rosy boa
- RC — Rufous-crowned sparrow
- SD — San Diego horned lizard
- SS — Sage sparrow
- TB — Tri-colored blackbird
- TS — Two striped garter snake

Species of Special Concern
- BA — American badger
- CH — Yellow-breasted chat
- CN — Cooper's hawk nest
- CP — Cooper's hawk perch
- EP — Golden eagle perch
- HP — Northern harrier perch
- O — Burrowing owl
- YW — Yellow warbler

Locally Sensitive
- BG — Blue-gray gnatcatcher
- BH — Black-crowned night heron
- BN — Common barn owl nest
- BP — Commonbarn owl perch
- GB — Great blue heron
- GH — Green-backed heron
- GS — Grasshopper sparrow
- SP — Red-shouldered hawk perch

Other Sightings of Interest
- BC — Bobcat
- GP — Great horned owl perch
- GR — Blue grosbeak
- KS — California king snake
- M — Mountain lion sign
- RN — Common raven nest
- RP — Raptor perch site
- RS — Probable raptor nest site
- SE — Snowy egret
- ST — Swainson's thrush
- TN — Red-tailed hawk nest
- TP — Red-tailed hawk perch
- UN — Unknown raptor nest
- UP — Unknown raptor perch
- VR — Verified raptor nest site

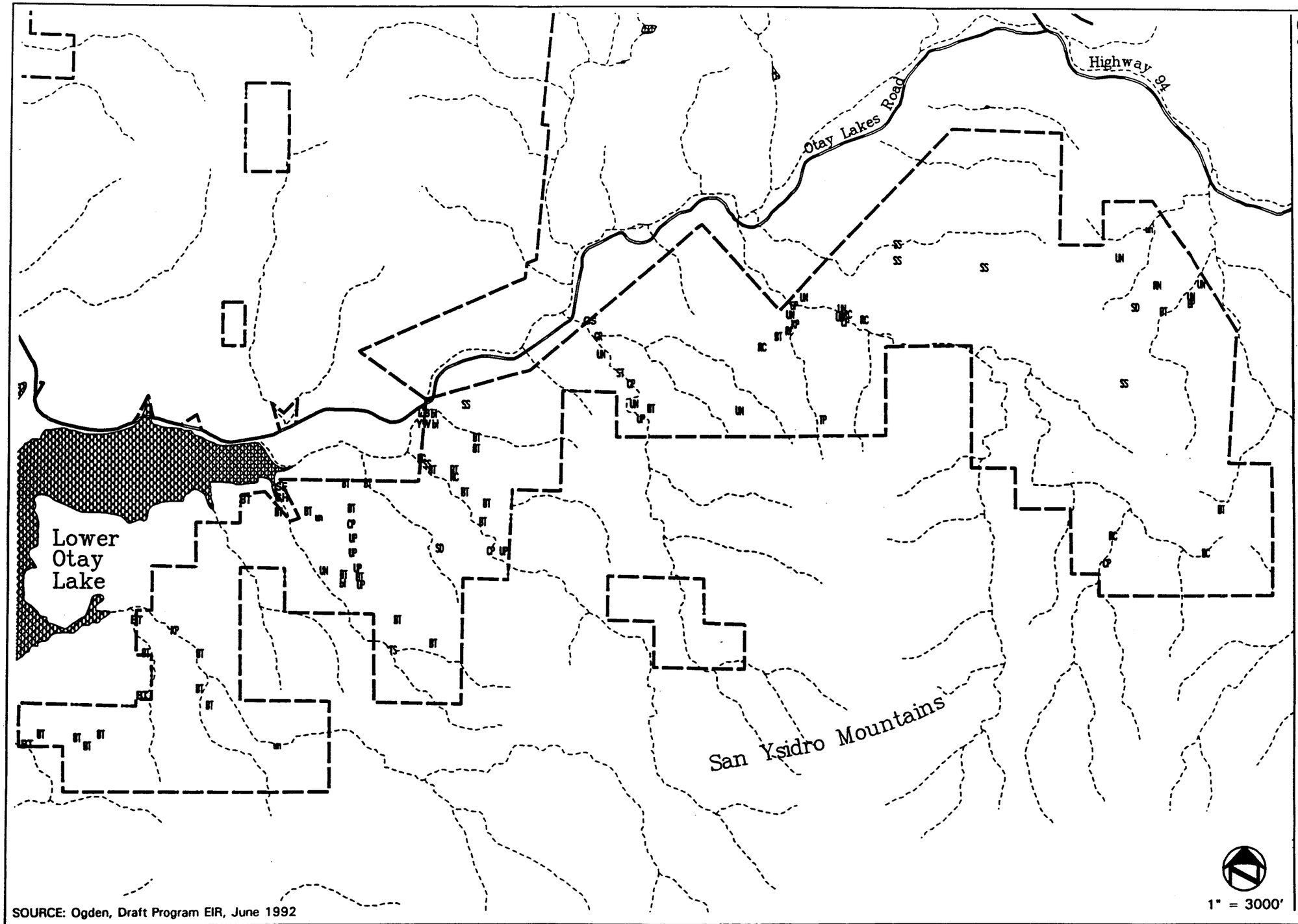
Lowercase letters indicate historic sightings

Uppercase letters indicate recent (1989 and later) sightings

Phase 1 Otay Ranch RMP

**Sensitive Animals (Sheet 2)**

FIGURE 5

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Lowercase letters indicate historic sightings

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SOURCE: Ogden, Draft Program EIR, June 1992

Phase 1 Otay Ranch RMP

**Sensitive Animals (Sheet 3)**

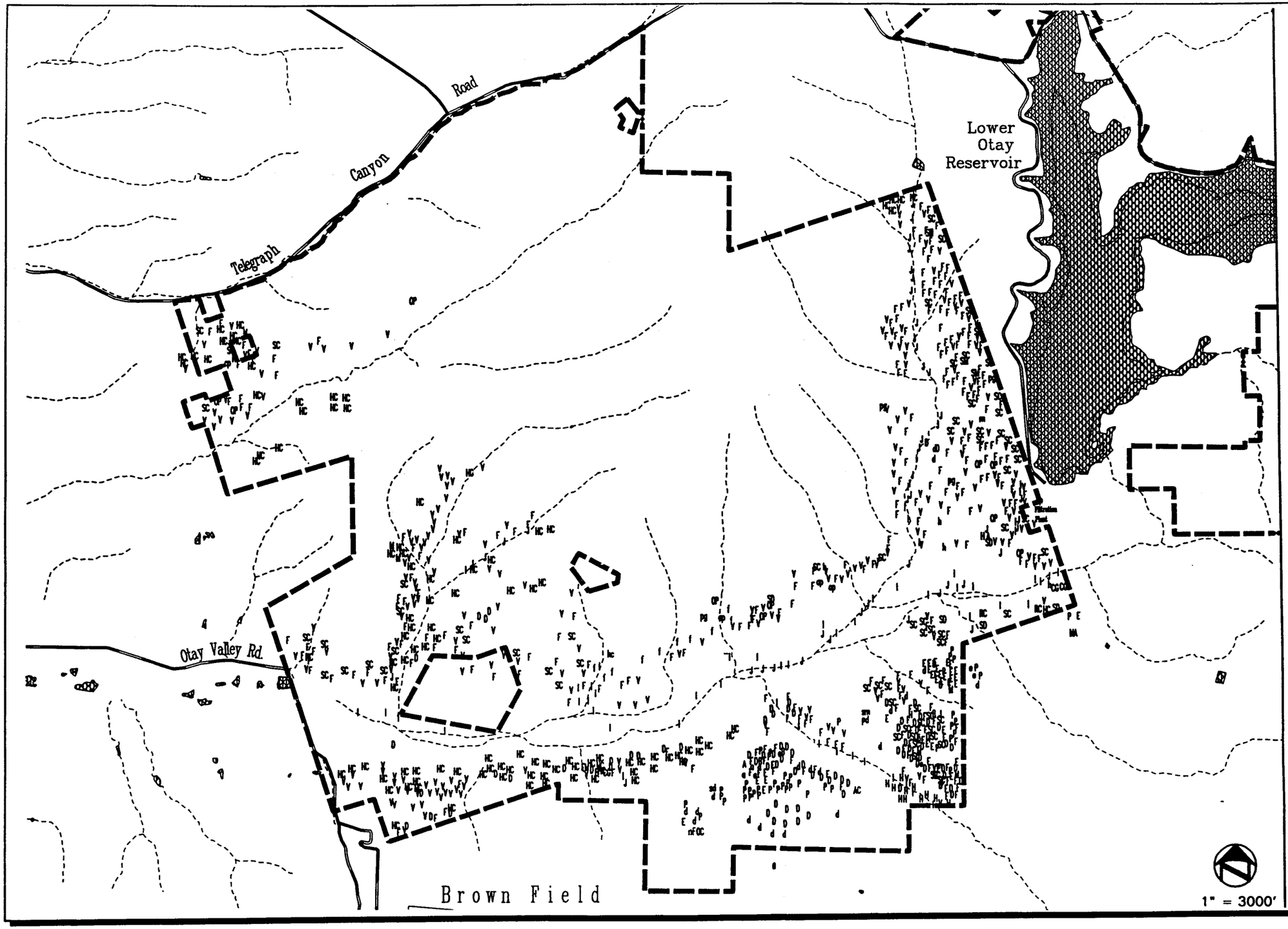
FIGURE 5

grass was reported several years ago and has not been observed since. Several Federal Category 2 candidates and species listed as rare (R), endangered (E) or threatened (T) by the California Department of Fish and Game have been reported, including San Diego thorn-mint (*Acanthomintha ilicifolia*), Otay manzanita (*Arctostaphylos otayensis*), Orcutt's brodiaea (*Brodiaea orcuttii*), dense reed grass (*Calamagrostis densa*), San Miguel savory (*Calamintha chandleri*), Dunn's mariposa lily (*Calochortus dunnii*), slender-pod caulanthus (*Caulanthus stenocarpus*), variegated dudleya (*Dudleya variegata*), San Diego barrel cactus (*Ferocactus viridescens*), Mexican flannelbush (*Fremontodendron mexicanum*), Otay tarplant (*Hemizonia conjugens*), Gander's pitcher-sage (*Lepechinia ganderi*), willowy monardella (*Monardella linoides* ssp. *viminea*), San Diego golden-star (*Muilla clevelandii*), little mouse-tail (*Myosurus minimus* var. *apus*), San Diego navarretia (*Navarretia fossalis*), and snake cholla (*Opuntia parryi* var. *serpentina*). Several species, including San Diego navarretia, little mouse-tail, Mexican flannelbush, snake cholla, and Dunn's mariposa lily, are represented by a few individuals or a few small populations. Others, such as San Diego barrel cactus, San Diego golden-star, variegated dudleya, and Otay tarplant, are either widespread throughout the ranch or represented by large localized populations.

In addition to those listed by CDFG and USFWS, 22 species of plants recorded from Otay Ranch are recognized as regionally sensitive by the California Native Plant Society (Smith and Berg 1988). The distribution of sensitive plant species on the Otay Ranch property, as mapped by MBA/RECON (1989, 1990), is presented in Figure 6.

**Prominent Landforms and Steep Slopes**

Prominent landforms and steeps slopes are considered to be important resources by the County RPO. Prominent landforms within the ownership include the Jamul and San Ysidro mountains and associated canyons, Rock Mountain, and the Otay River drainage system, including Salt




## LEGEND

| | |
|---|---|
| AI | Acanthomintha ilicifolia |
| A | Adolphia californica |
| AC | Ambrosia chenopodiifolia |
| AP | Ambrosia pumila |
| AO | Arctostaphylos otayensis |
| AR | Artemisia palmeri |
| BJ | Brodiaea jolonensis |
| B | Brodiaea orcuttii |
| CD | Calamagrostis densa |
| C | Calamintha chandleri |
| DU | Calochortus dunnii |
| CS | Caulanthus stenocarpus |
| CA | Chamaebatia australis |
| CP | Chorizanthe procumbens ssp. albiflora |
| CK | Clarkia delicata |
| CD | Comarostaphylis diversifolia ssp. diversifolia |
| CO | Cordylanthus orcuttianus |
| CG | Cupressus guadalupensis ssp. forbesii |
| DO | Dichondra occidentalis |
| D | Dudleya variegata |
| E | Eryngium aristulatum var. parishii |
| F | Ferocactus viridescens |
| FM | Fremontodendron mexicanum |
| H | Harpagonella palmeri |
| HC | Hemizonia conjugens |
| I | Iva hayesiana |
| J | Juncus acutus var. sphaerocarpus |
| L | Lepechinia ganderi |
| M | Muilla clevelandii |
| MA | Myosurus minimus var. apus |
| ML | Monardella linoides ssp. viminea |
| NF | Navarretia fossalis |
| OC | Orcuttia californica |
| OL | Ophioglossum lusitanicum ssp. californicum |
| OP | Opuntia parryi var. serpentina |
| P | Pogogyne nudiuscula |
| PG | Physalis greenei |
| PM | Pickeringia montana |
| Q | Quercus engelmannii |
| RC | Romneya coulteri var. trichocalyx |
| SC | Selaginella cinerascens |
| SD | Stipa diegoensis |
| SM | Salvia munzii |
| ST | Solanum tenuilobatum |
| V | Viguiera laciniata |

Lowercase letters indicate historic sightings

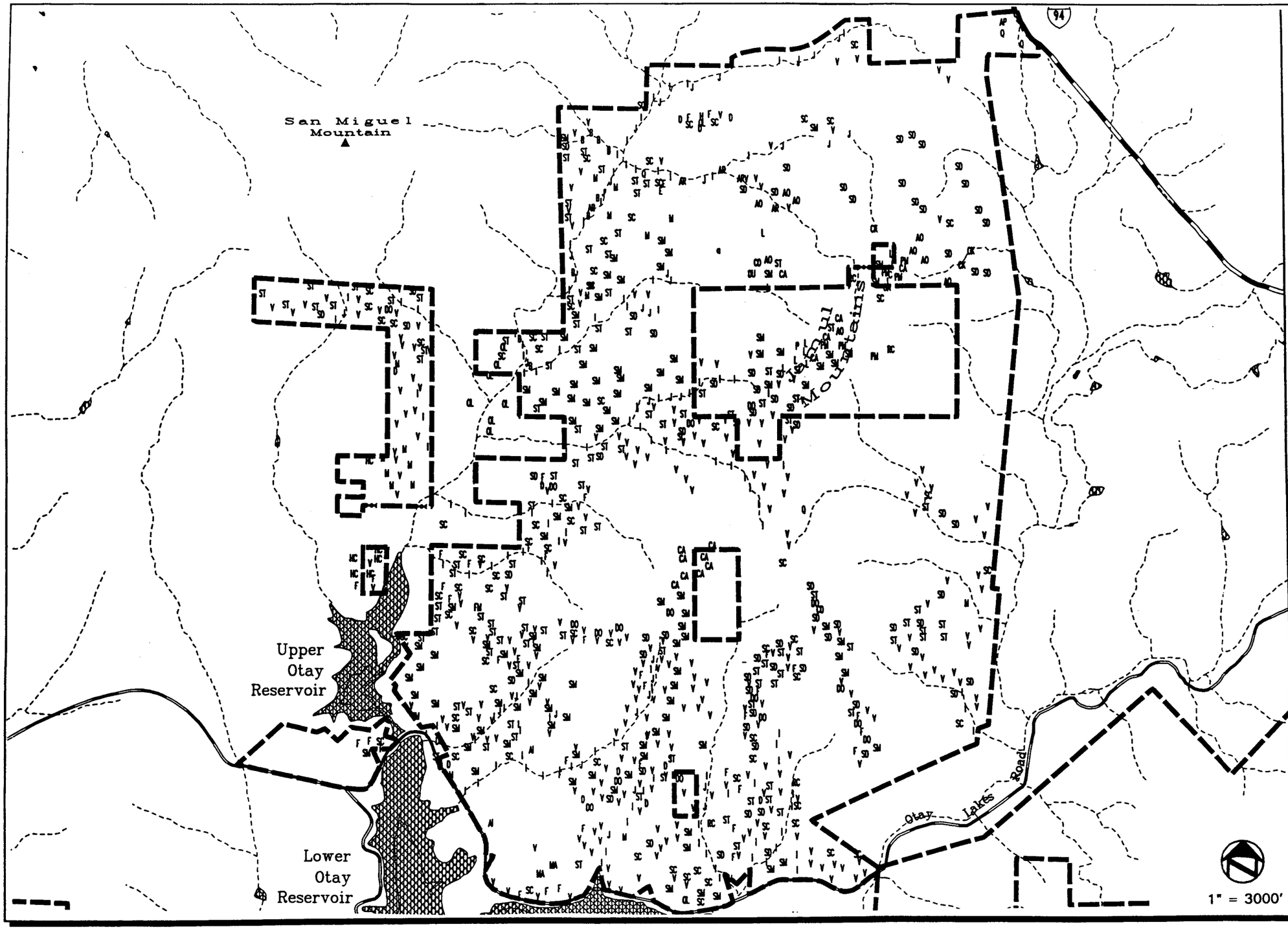
Uppercase letters indicate recent (1989 and later) sightings

SOURCE: ERCE, Draft Program EIR, August 1991

Phase 1 Otay Ranch RMP

**Sensitive Plants (Sheet 1)**

FIGURE 6

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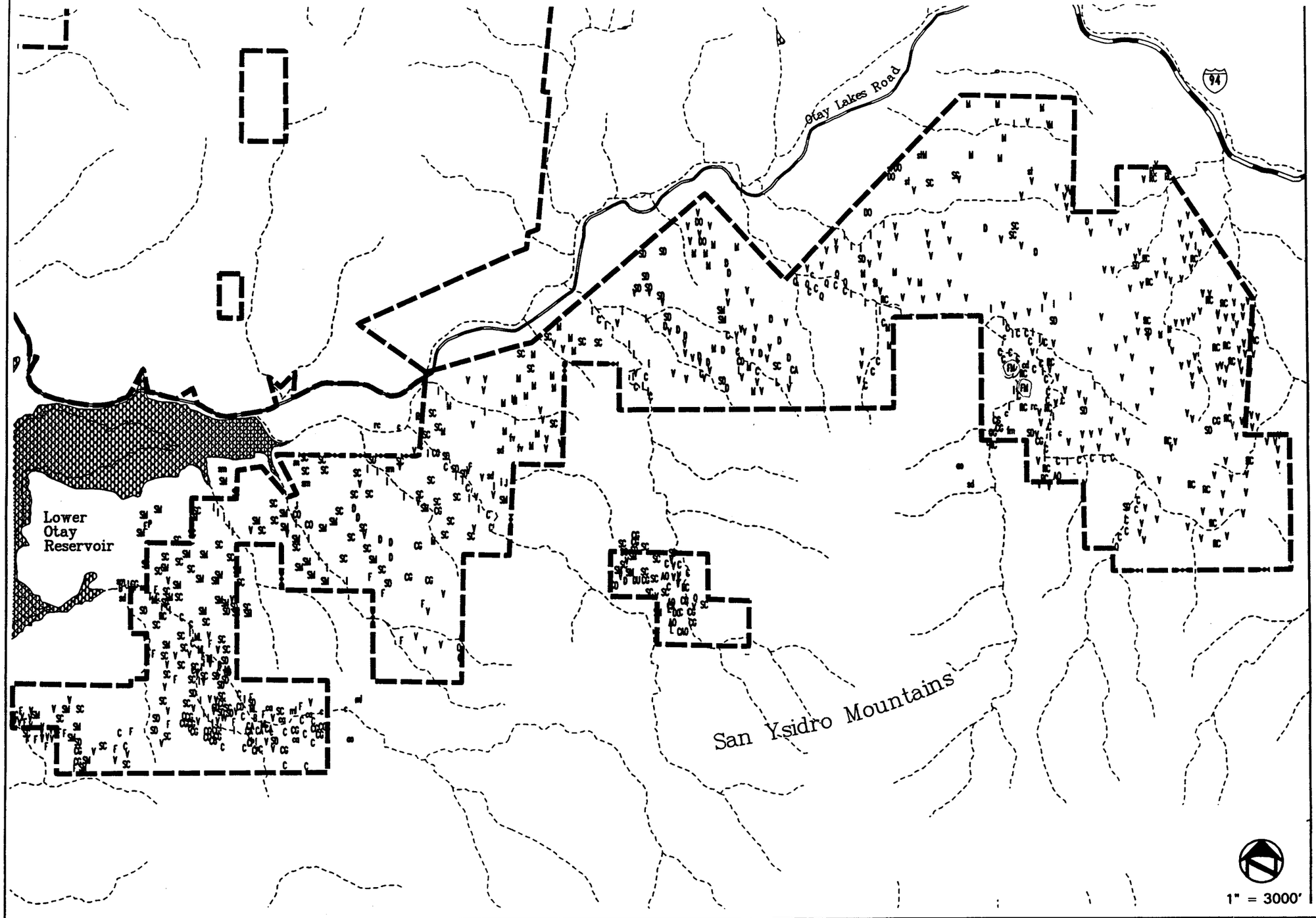
Phase 1 Otay Ranch RMP

**Sensitive Plants (Sheet 2)**

FIGURE 6

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SOURCE: ERCE, Draft Program EIR, August 1991

Phase 1 Otay Ranch RMP

**Sensitive Plants (Sheet 3)**

FIGURE 6

Creek Canyon, Poggi Canyon, and Wolf Canyon. In 1989, Dames & Moore completed a slope analysis of the property using USGS topography, the results of which are illustrated in Figure 7. The study concluded that about 33 percent of the study area (7,650 acres) consists of slopes greater than 25 percent. Most of the steep slopes are concentrated in the Jamul Mountains and San Ysidro Mountains in the northern and eastern portions of the Ranch.

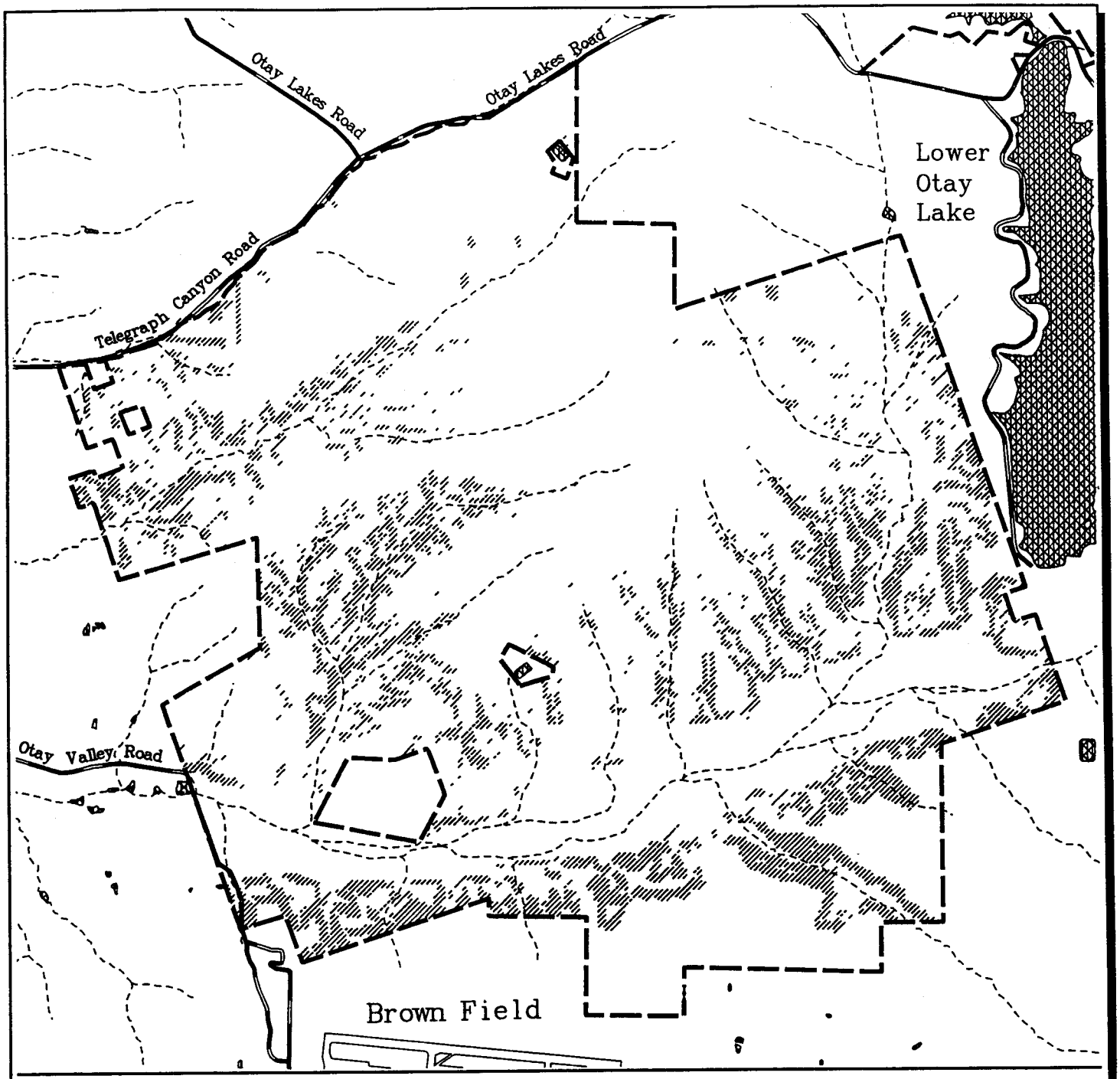
**Floodways and Floodplains**

Key hydrologic features within the study site are illustrated in Figure 8; these include the Otay River, Wolf Canyon, Poggi Canyon, and the Proctor Valley drainages. Other drainages within the study area include Telegraph Canyon, Johnson Canyon, O'Neal Canyon, Cedar Canyon, Little Cedar Canyon, and several others that descend from the Jamul and San Ysidro mountains. The most prominent drainage system within Otay Ranch is the Otay River Valley.

**Cultural Resources**

Existing cultural resources data for the Otay Ranch property have been assembled by Ogden, preparers of the Draft Program Environmental Impact Report (EIR) for Otay Ranch. The information presented below is taken from the Cultural Resources Technical Report and the Draft EIR. These documents provide more detailed information regarding cultural resources on Otay Ranch.

The Otay Ranch property includes a variety of natural habitats that provided a range of resources to prehistoric peoples. Different prehistoric site types and related resources occur in these natural areas. The several large drainages present on the property, such as the Otay River, Jamul Creek, and the Proctor Valley drainages, all contained prehistorically abundant floral and faunal resources providing food and materials for clothing and shelter. Such drainages, along with smaller creeks fed by natural springs, usually contain the highest density of prehistoric sites




▨ Slope Greater Than 25 Percent

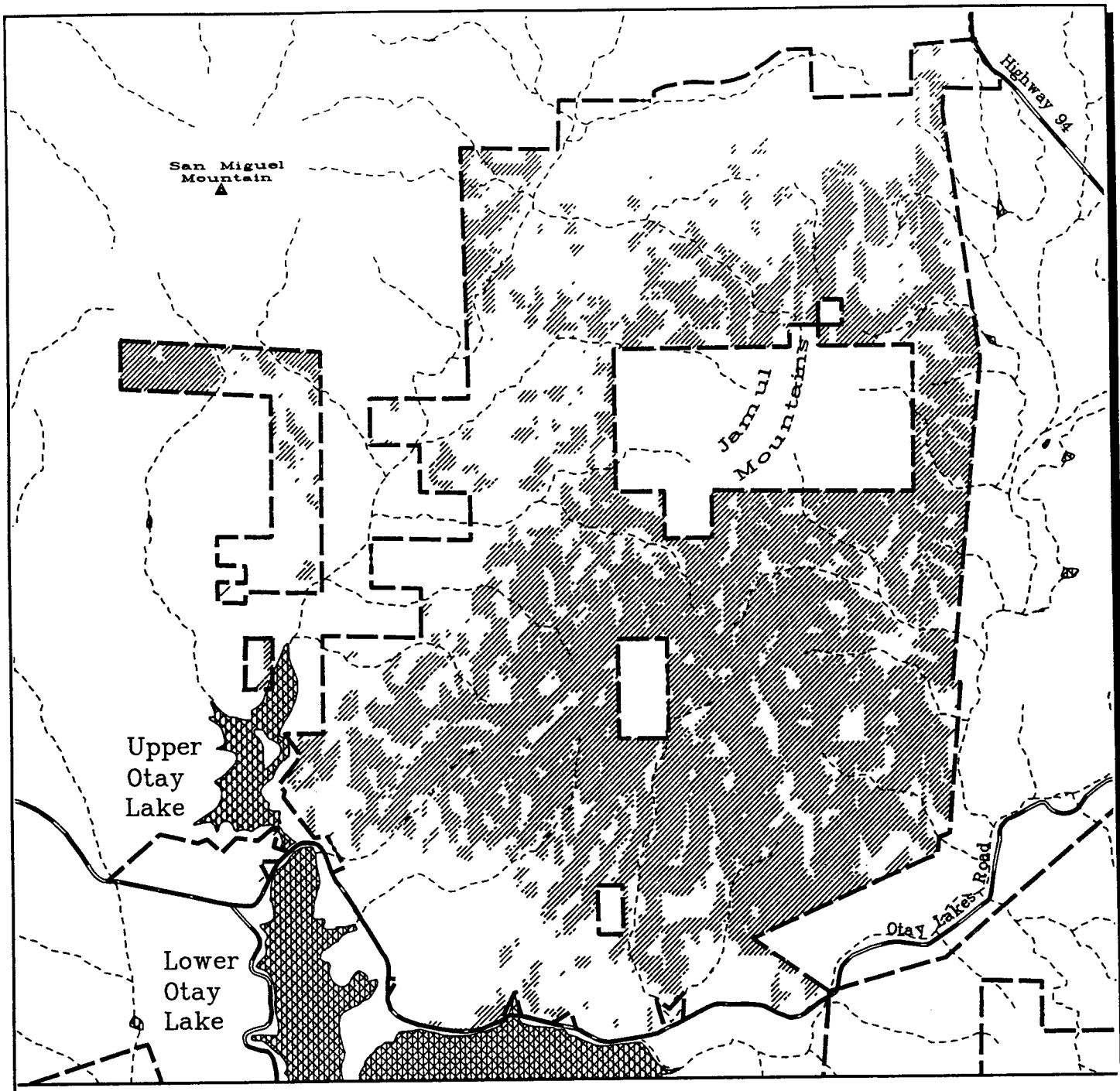
SOURCE: Ogden, Draft Program EIR, June 1992

1" = 4000'

Phase 1 Otay Ranch RMP

**Slope Analysis (Sheet 1)**

FIGURE 7




Slope Greater Than 25 Percent

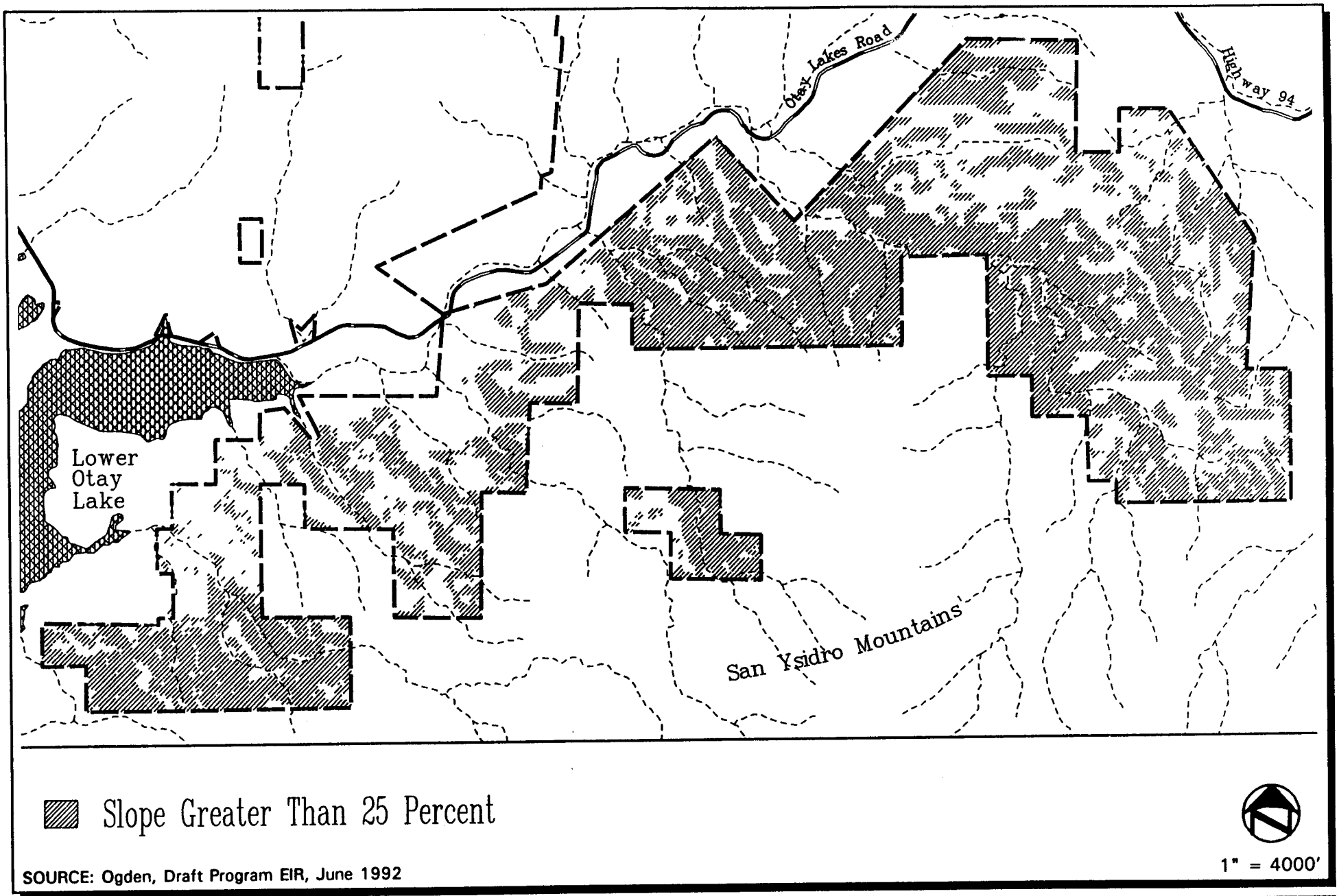
SOURCE: Ogden, Draft Program EIR, June 1992

1" = 4000'

Phase 1 Otay Ranch RMP

**Slope Analysis (Sheet 2)**

FIGURE 7




SOURCE: Ogden, Draft Program EIR, June 1992

Phase 1 Otay Ranch RMP

**Slope Analysis (Sheet 3)**

FIGURE 7

Legend

F.E.M.A. Floodplain

Other Drainage

Proctor Valley

Dulzura Creek

Upper Otay Reservoir

Lower Otay Reservoir

Canyon

Telegraph Canyon

Poggi Canyon

Wolf Canyon

Salt Creek

Otay River

Johnson Canyon

1" = 5500'

Phase 1 Otay Ranch RMP

**Hydrologic Features**

FIGURE 8

representing the most substantial occupations. Away from such drainages and springs, prehistoric sites are usually smaller, including temporary camps or resource procurement locations created during forays for specific purposes. Examples of such smaller sites include hunting camps, quarries, and other lithic procurement locations. Within the Otay Ranch property, the density and nature of the prehistoric sites that have been located to date generally conform to this pattern. The considerable time span of prehistoric occupation in the area (8,000 years or more), however, enables considerable variations in site locations and types through time due to climatic variation and the associated fluctuations in the vegetation, fauna, and water availability (Ogden 1992).

Historic development of the project area began in the late 1700s with the arrival of the Spaniards in coastal California. Spain ruled the area until 1821 when the Mexican independence movement succeeded. From 1821 to the war with the United States in 1848, Mexico governed the area. Use of the land by the Spaniards was minimal at first, but during the 1800s and thereafter, the region gradually acquired more residents who implemented ranching and agricultural activities. Remnants of scattered homesteads, related outbuildings, corrals, and water diversion features can be found throughout the project area. The remaining larger ranch complexes are more recent (1930's - 1940's) and are located in the more western, less rugged portions of the project area (Ogden 1992).

The description of the cultural (archaeological and historic) resources of the project area that follows is derived from records and literature searches and from several confidential technical reports of cultural resource studies conducted on the property. The most important of these studies are an archaeological overview prepared in 1987 for the property by TMI Environmental Services (Berryman and Berryman 1987) and two large-scale surveys. One of the surveys, an initial planning survey conducted by RECON (Ritz and Bull 1990), while including the entire 23,008-acre property, did not intensively cover all areas. The RECON survey included a

records search at the South Coastal Information Center at San Diego State University and at the Museum of Man to determine previously recorded sites located on the property; no literature search to determine previously surveyed areas was conducted as part of that survey. The second survey is an intensive ongoing survey and study conducted by ERCE of approximately 5,776 acres (Ogden 1992).

Several large areas of the property, approximately 17,000 acres, have not been intensively and systematically surveyed. Given that 292 prehistoric and historic sites have been recorded in the study areas that have been intensively surveyed, and that these sites represent a broad range of prehistoric and historic activities, it can be anticipated that at least 400-500 additional sites will be discovered during future surveys. Cumulatively, the research and interpretive potential of as many as 700-800 sites within Otay Ranch is unsurpassed in southern San Diego County. Of the 9,449 acres of the Otay Valley parcel, approximately 4,400 acres (i.e., 47 percent of the property) have been intensively surveyed for cultural resources. Of the 7,895 acres of the Proctor Valley parcel, approximately 1,500 acres (19 percent of the parcel) have been intensively surveyed for cultural resources. Only 200 acres (4 percent) of the 5,555 acres of the San Ysidro parcel have been intensively surveyed for cultural resources (Ogden 1992).

The various surveys conducted to date have been determined to be adequate for purposes of the Phase 1 RMP since the Phase 1 RMP is being processed concurrently with the GPA for Otay Ranch and future discretionary actions will be required prior to development of the Ranch. As required by Policy 1.3 of the RMP, an intensive systematic survey of those portions of Otay Ranch that have not yet been investigated thoroughly will be completed prior to approval of the first SPA/Specific Plan within Otay Ranch.

Three resource categories are not addressed in the County RPO but contribute to the overall character of Otay Ranch. These resources - paleontological, agricultural and recreation resources - are described below.

**Paleontological Resources**

Data regarding paleontological resources present on Otay Ranch were obtained from studies completed in 1988 for the Chula Vista General Plan update and existing available geologic mapping. Information regarding paleontological sensitivity of various geologic formations was obtained from the San Diego Natural History Museum. Three formations onsite offer the greatest potential for fossil remains - the San Diego Formation and the Otay Formation and the Sweetwater Formation. The locations of these formations on the Otay Ranch property are illustrated in Figure 9.

The San Diego Formation is a marine sedimentary deposit that dates back to the middle or late Pliocene (approximately 2-3 million years ago). It is exposed throughout the Sweetwater/Bonita area between Interstate Highway 805 (I-805) and Long Canyon, the western portion of the Eastern Territories of the City of Chula Vista, the eastern portions of Central Chula Vista, and the Montgomery area immediately adjacent to I-805. It has yielded extremely important fossil remains of many types of marine vertebrates (e.g., sharks, rays, bonyfishes, sea birds, walrus, fur seal, sea cow, dolphins, and baleen whales) and invertebrates (e.g., clams, scallops, snails, crabs, and sand dollars). In addition, the fossil remains of some terrestrial mammals, including cat, camel, deer, peccary, and horse, also have been recovered from the San Diego Formation.

The Otay Formation consists primarily of non-marine sedimentary rock dating from the Oligocene (approximately 27 million years old). It is exposed throughout the Eastern Territories west of Lower Otay Lake and along portions of the valley slopes in the Sweetwater/Bonita area. This formation is noted for its vertebrate fossil remains, including lizards, snakes, tortoises, birds, shrews, rodents, rabbits, dogs, foxes, rhinos, camels, and mouse deer. The Otay Formation is considered the richest source of late Oligocene terrestrial fossil vertebrates in California.

Legend

- Otay Formation
- Sweetwater Formation
- San Diego Formation

1" = 5500'

Phase 1 Otay Ranch RMP

**Paleontologically Sensitive Formations**

FIGURE 9

The Sweetwater Formation is a non-marine rock unit of Oligocene age (approximately 28-30 million years old). It consists of angular conglomerate, red-brown mudstone, gray-white sandstone, and red-brown gravelly sandstone. The formation attains its maximum thickness of about 210 feet in the area adjacent to Lower Otay Lake. Fossils are known only from the uppermost portion of the Sweetwater Formation as exposed at Eastlake. These fossils include the remains of terrestrial mammals such as oreodont, mouse deer and carnivores. The paucity of fossils in this formation probably is related to its mode of deposition (i.e., on a high energy alluvial fan).

**Recreational Resources**

Otay Ranch possesses significant potential for regional recreation opportunities. The large areas of open space and prominent visual features, such as Otay River Valley, Otay Lakes, and the surrounding mountains (Jamul, San Ysidro, San Miguel), endow the area with a wide range of aesthetic values. The presence of Otay Lakes and its surrounding extensive open space provide considerable recreation opportunities, including boating, fishing, biking, hiking, picnicking, and camping. The close proximity of Otay Ranch to San Diego and its metropolitan population (2,000,000 people) results in considerable recreation demand. The Otay River Valley and natural areas in the Jamul and San Ysidro mountains are particularly attractive, and these areas have been identified by local and regional agencies as potential recreation sites. Planning for the Otay Ranch Preserve must consider the fact that increased recreation is likely to occur in the project area. Policies for public access and permitted uses and activities consistent with RMP resource management are proposed. Educational and interpretive opportunities in a recreational context may greatly benefit the overall program.

### Agricultural Resources

Agricultural use of the Otay Ranch property prior to the 1850s consisted of dry farming and cattle and sheep grazing. Crop production was limited owing to the limited availability of water. The completion of Otay Dam in 1898 provided continuous irrigation water resulting in expanded farming and grazing activities. In the 1960s, much of the Ranch supported truck farming. Currently, upland areas on the Otay Valley Parcel are used for small grain production and beef-cattle grazing. Eastern portions of the Ranch are used as range land for cattle. According the United States Department of Agriculture Soil Conservation Service, approximately 737 acres of the Ranch are considered prime farmland; approximately 5,549 acres are considered to have "statewide importance"; and approximately 3,428 acres are designated as having "local farmland importance."

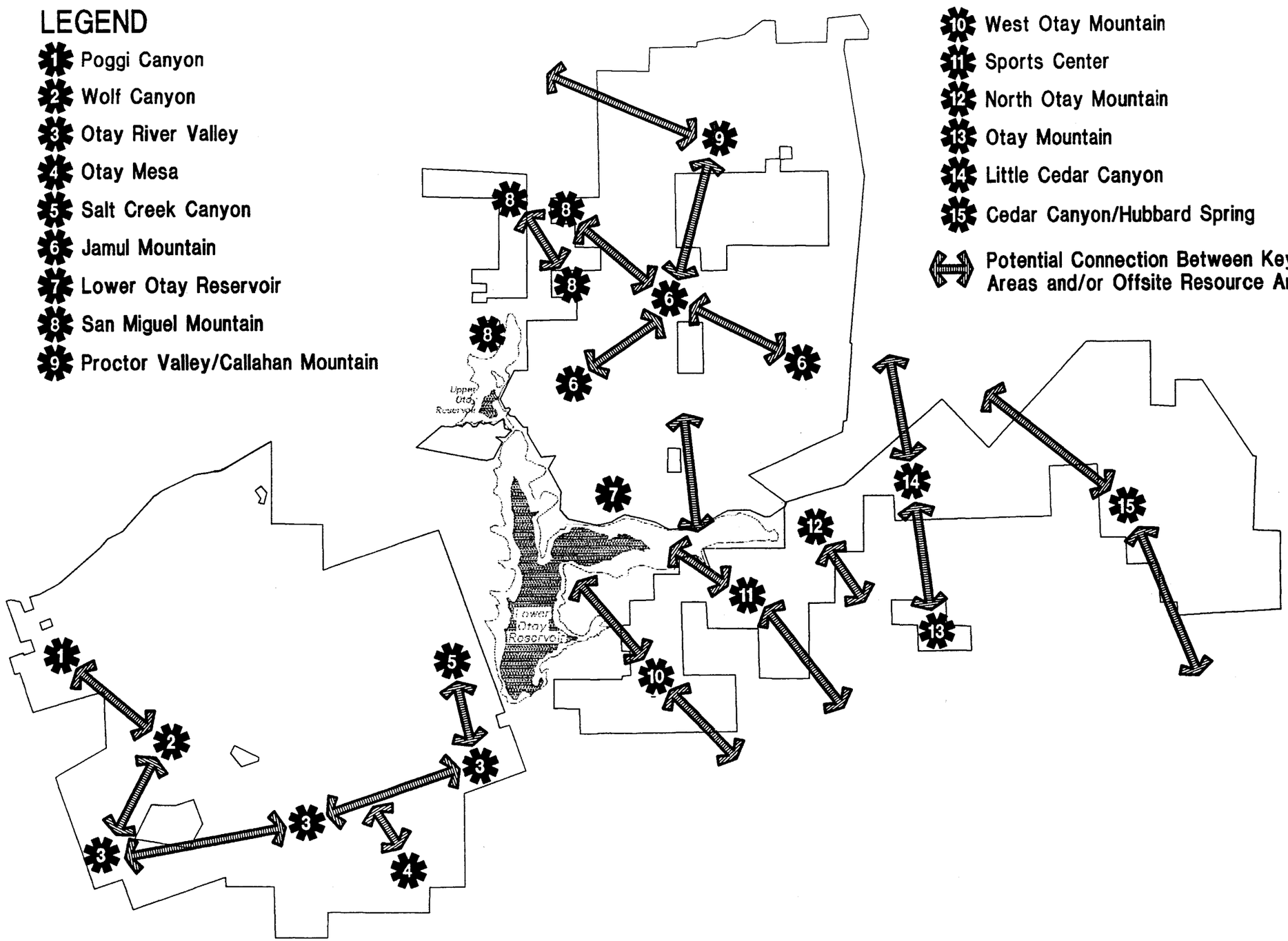
## 2.2 Key Biological Resource Areas

Biological resources are a particularly important consideration in the preparation of this RMP. Biological resources on the property have been evaluated in some detail by the landowner and his consultants, by the Otay Ranch Project Team staff, and by Ogden staff biologists, the Program EIR preparers. A number of high quality resource areas have been identified by most or all those who have evaluated biological resources on the Ranch. Although not always referred to as "key resource areas," the common identification of these areas in each of the analyses reinforces the validity of these areas as regions of high biodiversity and sensitivity within Otay Ranch. Figure 10 illustrates the general vicinity of the key resource areas and shows potential opportunities for linking these key resource areas into a contiguous open space system. Descriptions of each key resource area are presented below.

## LEGEND

1. Poggi Canyon
2. Wolf Canyon
3. Otay River Valley
4. Otay Mesa
5. Salt Creek Canyon
6. Jamul Mountain
7. Lower Otay Reservoir
8. San Miguel Mountain
9. Proctor Valley/Callahan Mountain
10. West Otay Mountain
11. Sports Center
12. North Otay Mountain
13. Otay Mountain
14. Little Cedar Canyon
15. Cedar Canyon/Hubbard Spring

↔ Potential Connection Between Key Resource Areas and/or Offsite Resource Areas




1" = 5500'

Phase 1 Otay Ranch RMP

**Key Biological Resource Areas/Potential Connections**

FIGURE 10

## OTAY VALLEY PARCEL

1) Poggi Canyon. This key resource area encompasses the topographically well defined Poggi Canyon in the northwestern portion of the parcel. It is contiguous with a high quality but limited resource area offsite to the west (Sunbow project). The area includes sensitive habitats such as maritime succulent sage and coastal sage scrub; small populations of California gnatcatchers (*Polioptila californica californica*), cactus wrens (*Campylorhynchus brunneicapillus sandiegensis*), and sage sparrows (*Amphispiza belli*); raptor foraging and perching sites; and sensitive plants, including San Diego sunflower (*Viguiera laciniata*), San Diego barrel cactus (*Ferocactus viridescens*), ashy spike-moss (*Selaginella cinerascens*), Otay tarweed (*Hemizonia conjugens*), and snake cholla (*Opuntia parryi* var. *serpentina*). The area is considered to have high resource value.

2) Wolf Canyon. Wolf Canyon represents a topographically well defined resource area, in the western portion of the Otay River Valley parcel. It includes all of the sensitive resources present in Poggi Canyon, including California gnatcatchers (*Polioptila californica californica*), cactus wrens (*Campylorhynchus brunneicapillus*), and Otay tarweed (*Hemizonia conjugens*). It also is utilized by raptors for foraging and perching. Wolf Canyon is contiguous with the Otay River Valley via a narrow linkage west of Rock Mountain.

3) Otay River Valley. The Otay River Valley is the most conspicuous landscape feature of this parcel. It extends the entire length of the parcel from east to west. Although the river valley has been disturbed heavily in the past by sand and gravel mining and by agriculture, its major attribute is the fact that it could be restored to provide a mosaic of valuable wetland and floodplain scrub habitats. The river floodplain supports populations of two sensitive plant species - San Diego marsh-elder (*Iva hayesiana*) and spiny rush

(*Juncus acutus* var. *sphaerocarpus*). The northern slopes of the valley support maritime succulent scrub and coastal sage scrub inhabited by California gnatcatchers (*Polioptila californica californica*), cactus wrens (*Campylorhynchus brunneicapillus sandiegoensis*), and blue grosbeak (*Guiraca caerulea*). The northern slopes of the valley also support a variety of sensitive plants, including San Diego barrel cactus (*Ferocactus viridescens*), ashy spike-moss (*Selaginella cinerascens*), snake cholla (*Opuntia parryi* var. *serpentina*), San Diego sunflower (*Viguiera laciniata*), and Coulter's matilija poppy (*Romneya coulteri*). The southern slopes of the valley support an extensive population of Otay tarweed (*Hemizonia conjugens*) and small populations of San Diego County needlegrass (*Achnatherum diegoensis*) and Coulter's matilija poppy (*Romneya coulteri*). The scrub habitat of the valley provides a potential corridor for movement of cactus wrens and California gnatcatchers.

4) Otay Mesa. Otay Mesa is situated in the southeastern portion of the parcel, south of the Otay River Valley. Topographically, the area is dominated by Mima mounds on marine terraces. The area includes extensive vernal pool habitat supporting four state-listed plant species: Otay tarweed (*Hemizonia conjugens*), San Diego button-celery (*Eryngium aristulatum*), Otay Mesa mint (*Pogogyne nudiuscula*), and California Orcutt's grass (*Orcuttia californica*). The mesa area also includes coastal sage scrub and maritime succulent scrub supporting populations of variegated dudleya (*Dudleya variegata*), San Diego golden-stars (*Muilla clevelandii*), San Diego barrel cactus (*Ferocactus viridescens*), California adolphia (*Adolphia californica*), and San Diego sunflower (*Viguiera laciniata*). Adjacent to the eastern edge of the mesa is O'Neal Canyon, supporting gnatcatcher-occupied coastal sage scrub and probably functioning as a portion of a local and/or regional wildlife corridor to the Otay River Valley.

5) Salt Creek Canyon. Salt Creek Canyon is located along the western edge of the parcel. The area supports the highest densities of California gnatcatchers and cactus wrens on the Ranch. The area is a mosaic of maritime succulent scrub and Diegan coastal sage scrub. The area supports numerous sensitive plants, including the largest and most significant Otay Ranch populations of San Diego barrel cactus (*Ferocactus viridescens*) and snake cholla (*Opuntia parryi* var. *serpentina*). Other sensitive plant species present include San Diego sunflower (*Viguiera laciniata*), ashy spike-moss (*Selaginella cinerascens*), variegated dudleya (*Dudleya variegata*), spiny rush (*Juncus acutus*), and Otay tarweed (*Hemizonia conjugens*). It is important that Salt Creek Canyon remain linked to the larger Otay River Valley area.

**PROCTOR VALLEY/JAMUL MOUNTAINS PARCEL**

6) Jamul Mountains. This key resource area includes in the Jamul Mountains encompassing large areas of coastal sage scrub, southern mixed chaparral, chamise chaparral, and live oak woodland. These habitats support a diversity of sensitive plant species, including San Diego County needlegrass (*Achnatherum diegoensis*), western dichondra (*Dichondra occidentalis*), San Diego barrel cactus (*Ferocactus viridescens*), and southern mountain-misery (*Chamaebatia australis*), and large populations of Munz's sage (*Salvia munzii*), and narrow-leaved nightshade (*Solanum tenuilobatum*). Spiny rush (*Juncus acutus* var. *sphaerocarpus*) and San Diego marsh-elder (*Iva hayesiana*) occur in the drainages. The woodland habitats of this key resource area are the most significant on the Ranch. Of all sensitive habitats, oak woodlands support the highest diversity of wildlife species. Some of the coastal sage scrub of this key resource area supports California gnatcatchers. Drainages and woodlands of this resource area may be important in facilitating wildlife movement across the Jamul Mountains and provide wildlife access to Lower Otay Lake.

7) Lower Otay Reservoir. This key resource area includes is situated north of Otay Lakes Road at the southwestern edge of the parcel. The area includes vernal pools supporting the only known Otay Ranch populations of little mousetail (*Myosurus minimus* var. *apus*). The area also includes a number of sensitive plant species including San Diego barrel cactus (*Ferocactus viridescens*), San Diego County needlegrass (*Achnatherum diegoensis*), San Diego sunflower (*Viguiera laciniata*), and ashy spike-moss (*Selaginella cinerascens*). The only Otay Ranch populations of San Diego thorn-mint (*Acanthomintha ilicifolia*) occur in this resource area. Sensitive wildlife species observed within the area include grasshopper sparrow (*Ammodramus savannarum*), California gnatcatcher (*Polioptila californica californica*), and San Diego horned lizard (*Phrynosoma coronata*).

8) San Miguel Mountain. The San Miguel Mountain resource area includes most of the disjunct inverted "L" shaped piece west of the Proctor Valley parcel and a few other isolated pieces. This resource area supports coastal sage scrub, chamise chaparral, southern mixed chaparral, native grasslands, vernal pools, and alkali meadow. Several sensitive plant species are present, including Orcutt's brodiaea (Brodiaea orcuttii), alder's tongue fern (*Ophioglossum lusitanicum*), Otay tarweed (*Hemizonia conjugens*), San Diego golden-stars (*Muilla clevelandii*), San Diego County needlegrass (*Achnatherum diegoensis*), narrow-leaved nightshade (*Solanum tenuilobatum*), western dichondra (*Dichondra occidentalis*), variegated dudleya (*Dudleya variegata*), spiny rush (*Juncus acutus* var. *sphaerocarpus*), and San Diego marsh elder (*Iva hayesiana*). This resource area also may facilitate wildlife movement from Jamul Creek to the east, uniting the Jamul Mountains with the San Ysidro Mountains.

9) Proctor Valley/Callahan Mountain. This resource area is located in the northern and northwestern portion of the Proctor Valley parcel. The area supports a large number of highly sensitive plant species including Orcutt's brodiaea (*Brodiaea orcuttii*), San Diego

button-celery (*Eryngium aristulatum*), San Diego golden-stars (*Muilla clevelandii*), Otay manzanita (*Arctostaphylos otayensis*), southern mountain misery (*Chamaebatia australis*), Dunn's mariposa lily (*Calochortus dunnii*), dense reed grass (*Calamagrostis densa*), Gander's pitcher-sage (*Lepechinia ganderi*), San Miguel savory (*Calamintha chandleri*), Campo clarkia (*Clarkia delicata*), San Diego sagewort (*Artemisia palmeri*), Engelmann oak (*Quercus engelmannii*), and San Diego County needlegrass (*Achnatherum diegoensis*). Sensitive habitats in this key resource area are vernal pool, alkali meadow, and native grassland. The area also provides a northerly wildlife movement corridor between San Miguel Mountain and the Jamul Mountains.

**SAN YSIDRO MOUNTAINS PARCEL**

10) West Otay Mountain. Situated in the western end of the San Ysidro Mountain parcel, the West Otay Mountain key resource area includes areas of coastal sage scrub, southern interior cypress forest, and chaparral. The area supports stands of Tecate cypress and the only Otay Ranch populations of the state-listed willowy monardella (*Monardella linoides*). Other sensitive species present include Munz's sage (*Salvia munzii*), San Diego sunflower (*Viguiera laciniata*), San Diego County needlegrass (*Achnatherum diegoensis*), summer-holly (*Comarostaphylis diversifolia*), ashy spike-moss (*Selaginella cinerascens*), and San Diego barrel cactus (*Ferocactus viridescens*). The area also supports several pairs of California gnatcatchers (*Polioptila californica californica*), and provides a valuable linkage from Otay Mountain to Lower Otay Lake.

11) San Diego Air Sports Center. The canyon south of the Borderland Air Sports Center in the western portion of the San Ysidro Mountain parcel includes high quality plant and wildlife habitat - primarily coastal sage scrub and limited chaparral. This key resource area includes some vernal pools (generally offsite) and isolated stands of Tecate cypress

(*Cupressus forbesii*). It supports the only known Otay Ranch populations of Orcutt's bird's-beak (*Cordylanthus orcutianus*). It also supports populations of several sensitive plant species, including Munz's sage (*Salvia munzii*), ashy spike-moss (*Selaginella cinerascens*), San Diego sunflower (*Viguiera laciniata*), variegated dudleya (*Dudleya variegata*), and San Diego barrel cactus (*Ferocactus viridescens*). The area also provides habitat for several pairs of California gnatcatchers (*Polioptila californica californica*). It is likely that the main drainage functions as a wildlife movement corridor from the San Ysidro Mountains to the reservoir.

12) North Otay Mountain. The North Otay Mountain resource area is located in the central portion of the San Ysidro Mountains parcel. The area includes coastal sage scrub, chaparral, and southern interior cypress forest, and supports a variety of sensitive plant and wildlife species. It represents a potential wildlife corridor between Otay Mountain to the south and Jamul Mountain to the north. The importance of the area as a wildlife corridor would be reduced if adequate corridors were provided to the east and to the west as part of the overall land plan. Otherwise this area would serve as a stepping stone to Dulzura Creek and the Proctor Valley parcel. To the immediate south of, and contiguous with this resource area is an extensive proposed wilderness area currently under the management of the BLM.

13) Otay Mountain. The Otay Mountain resource area is disjunct from the remainder of the contiguous San Ysidro Mountains parcel. It represents an inholding within the BLM land to the south of the San Ysidro Mountains parcel. This area supports large numbers of highly sensitive plants, such as Dunn's mariposa lily (*Calochortus dunnii*) and Otay manzanita (*Arctostaphylos otayensis*), and second priority plants, such Engelmann oak (*Quercus engelmannii*), ashy spike-moss (*Selaginella cinerascens*), Munz's sage (*Salvia munzii*), and San Diego sunflower (*Viguiera laciniata*). It also includes extensive southern interior cypress forest.

14) Little Cedar Canyon. Little Cedar Canyon encompasses a portion of a wildlife corridor extending from the San Ysidro Mountains north to the Jamul Mountains. The area supports several sensitive plant species, including San Diego County stipa (*Stipa diegoensis*), San Diego sunflower (*Viguiera laciniata*), variegated dudleya (*Dudleya variegata*), San Diego marsh-elder (*Iva hayesiana*), and Tecate cypress (*Cupress forbesi*). It also represents potential habitat for the California gnatcatcher (*Polioptila californica*).

15) Cedar Canyon/Hubbard Spring. This key resource area includes the southern-central and southern-eastern portions of the parcel. The area includes five different native plant communities - coastal sage scrub, mixed chaparral, southern coast live oak riparian forest, southern interior cypress forest, and grassland. Several sensitive plant species are present within the area, including Engelmann oak (*Quercus engelmannii*), Tecate cypress (*Cupressus forbesi*), San Diego sunflower (*Viguiera laciniata*), Coulter's matilija poppy (*Romneya coulteri*), San Diego marsh-elder (*Iva hayesiana*), and the only Otay Ranch population of Mexican flannelbush (*Fremontodendron mexicanum*). This resource area is directly linked to the adjacent BLM owned lands.

## 2.3 Character of the Surrounding Area

Located in southwestern San Diego County, Otay Ranch is within an area of transition of land uses between suburban and urban land uses to the west and southwest, and large expanses of natural open space to the north, east, and southeast. Surrounding land uses are illustrated in Figure 11. The Otay Ranch ownership virtually surrounds the City-owned Otay Lakes open space area. The Lake represents habitat for a variety of aquatic and semi-aquatic plants and animals, and provides a valuable water resource for the local fauna, including several sensitive wildlife species (e.g., least Bell's vireo). Although the city-owned lake accommodates recreation activities, such as boating, fishing, and hiking, the general area retains high wildlife values.


LEGEND

1. City of San Diego Water Utilities Department
2. County Park
3. County Jail
4. State Prison
5. Brown Field
6. Otay Mesa Community Plan Area - Future Industrial (City of San Diego)
7. Tijuana Airport
8. Tijuana River Valley Regional Park
9. Otay Mesa Community Plan Area - Future Residential (City of San Diego)
10. Quarry
11. Otay Landfill
12. Downtown Chula Vista
13. Rancho del Rey
14. Southwestern Community College
15. Eastlake
16. Sweetwater Reservoir
17. Jamul
18. Daley Ranch
19. BLM Otay National Cooperative Land & Wildlife Management Area
20. Second Border Crossing
21. Otay Valley Road Industrial Area
22. Sunbow
23. Chula Vista Community Hospital

SOURCE:
Aerial Fotobank, Inc.
Date Flown: June 1990

No Scale

Phase 1 Otay Ranch RMP
**Surrounding Land Uses**

FIGURE 11

Much of the land surrounding the lake is in an undisturbed state, supporting native plant and wildlife communities and numerous sensitive species.

The Mother Miguel, San Miguel, McGinty Mountain complex lies to the north of the Ranch (i.e., the Proctor Valley/Jamul Mountains parcel). These large metavolcanic foothills of the Peninsular Ranges are topographically heterogeneous with large areas of steep slopes. Most of the area is undeveloped and supports high quality biological resources. A large portion of McGinty Mountain is a conservation area under the ownership/control of The Nature Conservancy and California Department of Fish and Game. The Jamul, San Miguel, and McGinty mountains together represent a large, nearly contiguous block of terrain connecting the Otay River Valley with the Sweetwater River drainage.

To the east of Otay Ranch, much of the land has been farmed or grazed, and much of it continues to support active ranching activities. Even though disturbed by agricultural and ranching activities, most of the land is free of permanent development. Highway 94, a busy two-lane road, runs parallel to the eastern boundary of the ranch. It is anticipated that the Daley Ranch will remain undeveloped at least until 1995 because the property is in an agricultural preserve.

To the south of Otay Ranch lies the extensive San Ysidro Mountains (including Otay Mountain), encompassing the extensive BLM Otay Mountain Management Area. These mountains have long been recognized as floristically unique, supporting a variety of endemic plants and interesting habitat associations. The San Ysidro Mountains support the largest known populations of Tecate cypress whose distribution is highly restricted. The BLM ownership extends from the southern portion of the Ranch to the international border.

To the south of the Otay River Valley parcel, most of the area is developed and/or disturbed. Land immediately adjacent to the Otay Ranch ownership is occupied by City and County of San Diego land uses, including prisons, industrial development, Brown Field airport, and a raceway. A majority of Otay Mesa, although generally planned for industrial use, currently is undeveloped. The Otay River Valley itself constitutes a vital natural linkage from Otay Lakes to San Diego Bay. Although considerable portions of this well defined feature have been severely degraded by past sand and gravel mining activities, some portions of the river valley support high quality riparian vegetation, and other portions possess great potential for riparian restoration. The potential of this region for recreation, resource protection, and visual relief is manifested in the proposal that the Otay River Valley be transformed into a linear regional park extending from Otay Lakes to San Diego Bay. To the west and north of the Otay River Valley parcel, the urbanized portions of Chula Vista are encroaching rapidly.

The pace and intensity of development in the general area has changed in recent years, altering the character of properties to the north and west of the Ranch. Ongoing changes in the character of the surrounding ownerships affect the design of the Otay Ranch Preserve in two ways: 1) surrounding and adjacent development influence Preserve design by affecting boundary locations and enhancement/restoration opportunities; and 2) surrounding development patterns affect regional open space habitat linkage opportunities. When the relative levels of potential and current development surrounding the Ranch are compared, it is apparent that the largest blocks of offsite open space and habitat linkage opportunities are to the southeast and east of the Ranch. However, mitigation parcels associated with development to the north and northwest provide potential linkages in these directions as well. Maintenance of the open character of the Otay River Valley and habitat linkages to the San Miguel and McGinty Mountains represent important opportunities for regional connectivity.

## 2.4 Background on Preserve Design Theory and Practice

In addition to developing a data base and identifying key resource areas, a review of existing theories and literature regarding preserve design and resource protection is also useful in providing the resource protection framework for the RMP. The science of preserve design for biological resources is still in its early stages of development. The basic criteria for preserve design have been extrapolated from MacArthur and Wilson's (1963, 1967) work on island biogeography. The MacArthur and Wilson equilibrium model of island biogeography provides four major features which have been influential in optimal preserve design: (1) Area effect - the larger the preserve, the greater the species richness (i.e., species/area relationship) and the greater the chances of long term viability of populations (more individuals); (2) Isolation or distance effect - the lesser the distance between preserve units, the greater the opportunity for gene flow, colonization, and rescue effect (e.g., Brown and Kodric-Brown 1977); (3) Species equilibrium - the number of species that the preserve can support is determined by a balance between colonization and extinction; and (4) Relaxation - patches of habitat recently separated from larger patches will be in an "oversaturated" condition and will gradually lose species until an equilibrium level is reached. One additional feature - edge effect - is of equal importance: the larger the ratio of preserve area to preserve perimeter, the lesser the edge effect (e.g., fewer opportunities for the introduction of weedy, invasive, non-native species). While all these features appear to provide insight into sound preserve design, they may, in fact, be too general and of limited value in generating practical preserve design solutions. For example, habitat heterogeneity is far more important than area alone in maintaining biodiversity (the number of species of plants and animals within a biological system). Although larger patches of homogeneous habitat are capable of supporting larger populations of specific species, heterogeneity is responsible for greater diversity. Because ecosystem stability and long-term viability are closely related to diversity, optimizing species richness is an important goal. Simberloff and Abele (1976) demonstrated that a network of islands may have greater species

diversity than a single, large, contiguous island of the same size. Thus, Simberloff (1981) argues that to prevent local population extinctions, large total refuge areas are preferred, but it is not necessary for all the area to be contiguous. Soule *et al.* (1988) have demonstrated that factors such as vegetation cover may be more important than area alone in determining bird species richness in coastal sage scrub communities in San Diego County. Soule *et al.* (1988) also indicate that owing to the exceedingly limited mobility of most coastal sage scrub bird species, distances of more than 25-50 meters between patches may represent significant barriers to dispersal. The latter findings argue strongly in favor of interconnecting all appropriate habitat patches via corridors or similar linkages. While edges do indeed provide avenues for the introduction of non-native species, in many situations the interface between non-native and natural communities provide open areas for foraging animals and may be characterized by a higher diversity than either the native or non-native components alone.

Patches of native habitat can be viewed as "islands" surrounded by a sea of inhospitable habitat. Based on MacArthur and Wilson's (1963, 1967) theory of island biogeography, there is an equilibrium number of species that an island can support based on its size and distance from species pools (i.e., sources of colonization). This equilibrium level is maintained by a dynamic balance between extinction and colonization; species composition is constantly changing as a function of species "turn-over" rates. Pielou (1979) suggests that upon separation from the mainland, continental islands have an "oversaturated" biota, and that a period of floral and faunal reduction (relaxation) must ensue until the number of species on the island falls to an appropriate equilibrium level. Clear evidence of faunal reduction has been demonstrated by Wilcox (1978) for the lizard faunas of several Baja California continental islands. This situation is analogous to that created by urban development - former large and contiguous patches of habitat are fragmented or isolated into smaller patches or islands (even if the patches are large). The natural tendency of these newly created islands (habitat patches) is to lose floral and faunal components until an equilibrium level is reached. All development, no matter how carefully planned, will result in habitat fragmentation at some level, be it local or regional. Hence, the

maintenance of biotic diversity is threatened by any type of land use modification. Exacerbating the deleterious effects of habitat fragmentation is the fact that Mediterranean scrub habitats, such as coastal sage scrub and chaparral, are highly "fragile" communities that are more vulnerable to faunal collapse than are temperate forests and grasslands (Soule *et al.* 1988). Fortunately, the detrimental impacts of fragmentation can be reduced significantly through the implementation of well planned wildlife corridors or linkages between habitat patches. Hence, in addition to the need to preserve large blocks of habitat for plants and wildlife, the blocks must be interconnected to form a comprehensive preserve system.

Studies by Soule *et al.* (1988) have identified several features that are vital for the maintenance of bird species richness in fragmented habitats in southern California. These include large patch size for maintenance of viable population sizes, connectivity to facilitate animal movement between patches, and maintenance of select predators such as coyotes to keep the impact of certain bird-eating meso-predators in check. If these features can be incorporated into the Preserve on Otay Ranch, natural ecosystem functions are likely to be maintained. The maintenance of self-sustaining natural ecosystems is the primary goal of the Preserve, because a naturally functioning system will require less management.

Some biotic elements do not fit readily into preserves for multi-species. The design criteria for preserving small, already isolated populations of some plant species may require a more simplistic approach. If these small isolated populations are already functioning in the absence of corridors or conspicuous gene flow, then preservation of small habitat islands for these species may be appropriate. For small animals such as insects, a 5-10-acre patch of habitat actually may contain numerous islands or populations of that species. On a mesa containing vernal pools, each vernal pool may function as its own island. Hence, a 25-50-acre vernal pool preserve may include substantial genetic diversity and may not require a corridor to the nearest vernal pool habitat. Arnold (1983) concludes that island (habitat patch) size is not linearly

correlated with endangered butterfly population size; density, patchiness, and quality of resources are more important in determining population size. Loman and von Schantz (1991) conclude that even for some native bird species in habitat fragmented by farmland, "very small habitat islands [less than 1 ha] may, per area, be as valuable or even more valuable than medium sized islands [1-10 ha]." Smaller patches of higher quality resources may support larger populations and greater diversity.

The conclusion that can be drawn from this brief review of theoretical concepts and practical examples is that few general principles are applicable in all preserve design situations. Each preserve must be designed to meet the specific needs of the species of concern in the region in which the preserve is to serve as a bastion of biodiversity. Optimal size and arrangement of refuges should be based upon knowledge of dispersal characteristics and population dynamics of species in need of protection (Arnold 1983). Hence, design, size, and configuration of the Preserve for Otay Ranch must focus precisely on the species and habitats of concern in southern California. Preserve design criteria applied elsewhere may be ineffective or inappropriate for Otay Ranch.

# CHAPTER 3

# GOAL, OBJECTIVES, POLICIES OF THE RMP

# 3.0 GOAL, OBJECTIVES, POLICIES OF THE RMP

## 3.1 Introduction and Definitions

This chapter identifies the primary goal of the RMP and provides objectives and policies that will guide its implementation. Identification of the Preserve as part of the GPA/GDP/Subregional Plan process is the critical first step towards the protection and management of the sensitive resources of Otay Ranch. The Preserve is located, however, immediately adjacent to properties that are under intense development pressures, both within and outside Otay Ranch. The certainty that such urban uses will be located in proximity to the Preserve, with the attendant increase in demand to use open areas for recreation, urban runoff disposal, illegal dumping, and other activities that degrade resource values, dictate that it is not enough to simply identify the the Preserve on a land use plan. It is also necessary to establish binding and enforceable standards to ensure protection of sensitive resources. This chapter sets forth those policies and standards.

Goals, objectives, policies, standards, and guidelines are fundamental components of a planning document such as the Resource Management Plan. The definition of each is somewhat different, and each depends on the other to achieve or provide direction toward a desired end result. In general, the following definitions may be applied to a goal, objective, policy, standard, and guideline.

### Goal

A goal is a direction-setter. It is an ideal future end, condition, or state related to the public health, safety, or general welfare toward which planning and planning implementation measures are directed. A goal is a general expression of community values and, therefore, is abstract in nature. Consequently, a goal is generally not quantifiable, time-dependent, or suggestive of specific actions for its achievement. For the RMP, a single overriding goal has been identified as described in the following section.

## Objective

An objective is a specific end, condition, or state that is an intermediate step toward attaining a goal. It should be achievable and, when possible measurable and time-specific. An objective may pertain to one particular aspect of a goal or it may be one of several successive steps toward goal achievement. Consequently, there may be more than one objective for a goal. Nine objectives have been identified or the one RMP goal.

## Policy

A policy is a specific statement that guides decision-making. It indicates a clear commitment of the local legislative body. A policy is based on a plan's goals and objectives as well as the analysis of data. A policy is effectuated by implementation measures such as standards and guidelines. Consequently, a realistic policy is one that is adopted by local legislators who are mindful of a plan's implementation.

## Standard

A standard is a measurable criterion used to evaluate achievement of a stated policy. Not all policies have quantifiable standards.

## Guideline

A guideline is a suggested method or procedure for achieving identified standards.

## 3.2 The Resource Management Plan Goal, Objectives, Policies and Standards

A single unifying goal has been established for the Resource Management Plan. It is:

**GOAL:**

**ESTABLISHMENT OF AN OPEN SPACE SYSTEM THAT WILL BECOME A PERMANENT PRESERVE DEDICATED TO THE PROTECTION AND ENHANCEMENT OF THE BIOLOGICAL, PALEONTOLOGICAL, CULTURAL (ARCHAEOLOGICAL AND HISTORICAL RESOURCES), FLOODPLAIN, AND SCENIC RESOURCES OF OTAY RANCH, THE MAINTENANCE OF LONG-TERM BIOLOGICAL DIVERSITY, AND THE ASSURANCE OF THE SURVIVAL AND RECOVERY OF NATIVE SPECIES AND HABITATS WITHIN THE PRESERVE, AND TO SERVE AS THE FUNCTIONAL EQUIVALENT OF THE COUNTY OF SAN DIEGO RESOURCE PROTECTION ORDINANCE (RPO).**

The objectives, policies and standards of the RMP are as follows:

**OBJECTIVE 1: - IDENTIFICATION OF SENSITIVE RESOURCES**

**Identify sensitive and significant biological, cultural, paleontological, agricultural, and scenic resources within Otay Ranch that require protection and/or management.**

***Policy 1.1***

Use existing resource data to identify key resource areas.

**Guideline:** Incorporate existing vegetation maps, sensitive species distribution maps, biological reports, the vernal pool report, the wildlife corridor study, the raptor habitat/foraging study, and all other pertinent data presented in studies by ASI, RECON, MBA, Ogden, and DUDEK, into the identification of key resource areas.

***Policy 1.2***

Complete biological studies currently in progress.

**Standard:** The following studies shall be completed by the landowner prior to or concurrent with the first SPA in the Phase 2 RMP:

1) Wildlife Movement/Corridor Study
2) Raptor Foraging/Habitat Study
3) Habitat and Population Studies on California Gnatcatcher and Cactus Wren (ongoing studies over 35-year period)
4) Vernal Pool Study

***Policy 1.3A***

In conjunction with the first SPA in the Otay Valley Parcel, complete cultural resource studies to assess cultural resources throughout the Otay Valley Parcel.

***Policy 1.3B***

In conjunction with the first SPA in the Proctor Valley Parcel, complete cultural resource studies to assess cultural resources throughout the Proctor Valley Parcel.

***Policy 1.3C***

In conjunction with the first SPA in the San Ysidro Mountains Parcel, complete cultural resource studies to assess cultural resources throughout the San Ysidro Mountains Parcel.

**Standard:** In conjunction with the Phase 2 RMP, a systematic survey for cultural resources shall be completed for all portions of Otay Ranch.

**Guidelines:**

1) Survey of the remaining unsurveyed area within each parcel shall be completed at the time of the first SPA approval.
2) Following completion of the systematic survey, sites recommended for testing within SPAs shall be tested and evaluated on a SPA-by-SPA basis for their importance pursuant to CEQA.
3) The testing program shall be conducted in accordance with County of San Diego Guidelines on a SPA-by-SPA basis.

***Policy 1.4***

Recover any significant fossils unearthed during grading activities for subsequent scientific study and/or display.

**Standard:** Prior to issuance of a grading permit within areas identified on Figure 9 of this document as paleontologically sensitive (i.e., the Otay, Sweetwater, and San Diego formations), a letter shall be filed with the lead agency indicating that a qualified paleontologist has been retained to carry out an appropriate mitigation program.

**Guidelines:**

1) A qualified paleontologist shall be present at all pregrading meetings to consult with grading and excavation contractors.

2) A qualified paleontologist shall be present during the original cutting of previously undisturbed sediments of geologic formations with high potential to support fossils, to inspect cuts for fossils.

3) Small fossils shall be recovered immediately; if required for excavation of larger fossils, cutting activities shall be temporarily diverted or halted. During grading, periodic reports shall be made by the paleontologist recommending expansion or contraction of monitoring activities as appropriate.

4) Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, sorted, and catalogued, after which they shall be deposited in an appropriate institution or display facility.

***Policy 1.5***

Identify and map floodplains within Otay Ranch.

**Standard:** Floodplain mapping shall include FEMA and County-mapped floodplains.

***Policy 1.6***

Identify major landforms within Otay Ranch.

**Standard:** The Otay Ranch GDP/Subregional Plan shall contain standards for the protection of major landforms and scenic resources.

**Guideline:** The Preserve shall include, but not be limited to, the following major landforms on Otay Ranch: the Jamul and San Ysidro Mountains and associated drainages, the Otay River drainage system including Salt Creek Canyon, Poggi Canyon and Wolf Canyon.

***Policy 1.7***

Identify and map agricultural lands within Otay Ranch on a SPA-by-SPA basis.

## OBJECTIVE 2: - PRESERVATION OF SENSITIVE RESOURCES

**Preserve sensitive and significant biological, cultural, paleontological, floodplain, visual, and agricultural resources.**

***Policy 2.1***

Include large blocks of key biological resource areas within the Preserve.

**Guidelines:**

1) Criteria for identifying key biological resource areas are as follows:

- Presence of State- or Federally-listed endangered or threatened species.
- Concentrations of CNPS listed plant species.
- Co-occurrence of USFWS Category 2 candidates and/or CDFG species of special concern.
- Large contiguous areas of coastal sage scrub habitat for the California gnatcatcher.
- Areas supporting locally and regionally recognized sensitive habitats types (e.g, wetlands, southern interior cypress forest, etc.).
- Presence of regional and local wildlife corridors.

2) The boundaries of the key resource areas are generalized. Key biological resource areas are identified on Figure 10 of this document and described in Section 2.2, and include the following:

-- Poggi Canyon

-- Wolf Canyon

-- Otay River Valley
-- Otay Mesa
-- Salt Creek Canyon
-- Jamul Mountain
-- Otay Reservoir
-- San Miguel Mountain
-- Proctor Valley/Callahan Mountain
-- West Otay Mountain
-- San Diego Air Sports Center
-- North Otay Mountain
-- Otay Mountain
-- Little Cedar Canyon
-- Cedar Canyon/Hubbard Spring

***Policy 2.2***

Preserve coastal sage scrub habitat (including Diegan coastal sage scrub, disturbed coastal sage scrub, maritime succulent scrub, coastal sage scrub/non-native grassland, and coastal sage scrub/chaparral). Habitat values can be measured in terms of number of acres, biodiversity, habitat maturity and presence of sensitive species.

**Standards:**

1) Preservation and restoration activities shall be consistent with the guidelines of any applicable regional open space/resource protection program and shall result in equal or greater overall habitat values than occur under existing conditions.

2) A minimum of 85% of the total acreage of coastal sage scrub habitat onsite shall be preserved or restored.

3) The 85% standard may be achieved through a combination of preservation (a minimum of 70% of existing habitat) with the remainder through restoration of disturbed and/or non-native habitats.

**Guidelines:**

1) The following blocks of high quality coastal sage scrub shall be included in the Preserve - Salt Creek Canyon, Wolf Canyon, Poggi Canyon, southwestern Jamul Mountains, western San Ysidro Mountains, slopes south and north of the Otay River.

***Policy 2.3***

Preserve native grasslands (valley needlegrass grassland).

**Standards:**

1) A minimum of 80% of the total acreage of native grassland habitat onsite shall be preserved or restored.
2) The 80% standard may be achieved through a combination of preservation (a minimum of 25% of existing habitat) with the remainder through restoration of disturbed and/or non-native habitats.
3) Restoration must result in habitat for threatened and endangered species that is of equal or greater value than that of the habitat disturbed.

***Policy 2.4***

Preserve the following habitat types: southern interior cypress forest, coast live oak woodland, oak riparian forest, riparian woodland, and sycamore alluvial scrub.

**Standard:** 100% of the acreage of southern interior cypress forest, coast live oak woodland, oak riparian forest, riparian woodland, and sycamore alluvial woodland (as mapped by MBA/RECON, 1989) shall be preserved. Where it is infeasible to include these areas within the Preserve, include in non-Preserve open space.

***Policy 2.5***

Maintain large, viable populations of the California gnatcatcher and cactus wren within the Preserve.

**Standards:**

1) Include within the Preserve sufficient habitat to maintain at least 52% of existing documented pairs/individuals of the California gnatcatcher.
2) Include within the Preserve sufficient habitat to achieve no loss of viable cactus wren populations.

**Guidelines:**

1) Achievement of this standard may be measured by evaluation of the sensitive animal maps (MBA/RECON, 1989) as updated by field mapping completed for the California gnatcatcher/cactus wren study as part of the first SPA in the Phase 2 RMP.
2) Achievement of this standard may include maintenance of populations in non-Preserve open space.

***Policy 2.6***

Preserve onsite State and Federally-listed rare, threatened, and endangered species (see Policy 2.9 for vernal pool species).

**Standards:**

1) Include within the Preserve 95% of San Diego thorn-mint (*Acanthomintha ilicifolia*) known to be present on the Ranch, i.e., the larger population including several thousand plants located in the southwestern portion of the Proctor Valley parcel. Implement required EIR mitigation measures.

2) Include within the Preserve 100% of Dunn's mariposa lily (*Calochortus dunnii*) known to be present on the Ranch, i.e., one small population at the upper end of Little Cedar Canyon and one small population on a peak in the northwest corner of the Jamul Mountains.

3) Include within the Preserve 100% of the Mexican flannelbush (*Fremontodendron mexicanum*) known to be present on the Ranch, i.e., three individuals in upper Cedar Canyon.

4) Include within the Preserve 70% of the Otay tarplant (*Hemizonia conjugens*) known to be present on the Ranch, i.e., several thousand plants in Salt Creek, Wolf Canyon, and the detached, inverted "L" parcel. Although this standard is below that for other State and Federally-listed plant species, the large number of individuals and widespread occurrence of Otay tarplant onsite indicate that it is less vulnerable than other State and Federally-listed species. The remaining populations onsite are extensive enough to assure the continued survival of this species.

5) Include within the Preserve 100% of the willowy monardella (*Monardella linoides* ssp. *viminea*) known to be present on the Ranch, i.e., several hundred plants in the bottom of a deep drainage on the west side of the San Ysidro Mountain parcel.

6) Include within the Preserve 100% of the slender-pod caulanthus (*Caulanthus stenocarpus*) known from the Ranch, i.e., the small population near the peak in the northwestern corner of the Jamul Mountains.

**Guidelines:**

1) Achievement of these standards may be measured by evaluation of the sensitive plant maps (MBA/RECON, 1989, 1990) as updated by Phase 2 RMP field mapping efforts which include measured areas of the populations to establish the number of individuals within those populations. Status reports shall be submitted with each SPA to ensure long-term documentation of population status.

2) Preservation of at least 90% of remaining populations of species recognized as threatened or endangered by CDFG and/or USFWS in the future.

***Policy 2.7***

Preserve onsite populations of plant species recognized as sensitive by the California Native Plant Society (Smith and Berg 1988).

**Standards:**

1) Include within the Preserve a minimum of 75% of Otay Ranch populations of plant species recognized as List 1B or List 2 by the California Native Plant Society (Berg and Smith 1988) (excluding those listed above in Policy 2.6): California adolphia (*Adolphia californica*), San Diego bur-sage (*Ambrosia chenopodiifolia*), Otay manzanita (*Arctostaphylos otayensis*), San Diego sagewort (*Artemisia palmeri*), Campo clarkia (*Clarkia delicata*), summer-

holly (*Comarostapylis diversifolia* ssp. *diversifolia*), Orcutt's bird's-beak (*Cordythalthus orcuttianus*), Tecate cypress (*Cupressus forbesi*), San Diego barrel cactus (*Ferocactus viridescens*), Palmer's grappling-hook (*Harpagonella palmeri*), San Diego marsh-elder (*Iva hayesiana*), Gander's pitcher-sage (*Lepechinia ganderi*), snake cholla (*Opuntia parryi* var. *serpentina*), narrow-leaved nightshade (*Solanum tenuilobatum*), San Diego County needlegrass (*Achnatherum diegoensis*), and San Diego County viguiera (*Viguiera laciniata*).

2) Include within the Preserve 54% of known points of occurrence for San Diego golden-star (*Muilla clevelandii*).

3) Include within the Preserve a minimum of 50% of the Otay Ranch populations of plant species recognized as List 3 or List 4 by the California Native Plant Society (Berg and Smith 1988): dense reed grass (*Calamogrostis densa*), San Miguel savory (*Calamintha chandleri*), southern mountain misery (*Chamaebatia australis*), Fallbrook spine-flower (*Chorizanthe procumbens* var. *albiflora*), western dichondra (*Dichondra occidentalis*), variegated dudleya (*Dudleya variegata*), spiny rush (*Juncus acutus* var. *sphaerocarpus*), dwarf pepper-grass (*Lepidium latipes*), California adder's-tongue fern (*Ophioglossum lusitanicum* ssp. *californicum*), Greene's ground-cherry (*Physalis greenei*), Engelmann oak (*Quercus engelmannii*), Coulter's matilija poppy (*Romneya coulteri*), and ashy spike-moss (*Selaginella cinerascens*).

4) Include within the Preserve a minimum of 46% of the Munz's sage (*Salvia munzii*) known from the Ranch. Although recognized as a List 2 species by CNPS, Munz's sage is extremely common and

widespread on the Proctor Valley parcel. Hence, preservation of 46% of this population will assure the continued survival of the species on the Ranch.

**Guideline:** Achievement of these standards may be measured by evaluation of the sensitive plant maps (MBA/RECON, 1989, 1990) as updated by Phase 2 RMP field mapping efforts which include measured areas of the populations to establish the number of individuals within those populations. Status reports shall be submitted with each SPA to ensure long-term documentation of population status.

***Policy 2.8***

Preserve onsite populations of plant and wildlife species recognized as Category 2 Candidates for listing by USFWS.

**Standard:** Include within the Preserve a minimum of 75% of Otay Ranch populations of plant and wildlife species recognized as Category 2 candidates by USFWS in a Preserve configuration which will ensure their conservation in perpetuity. This standard may be re-evaluated if future studies demonstrate a greater or lesser need for conservation of any resources.

**Guidelines:** Achievement of this standard may be measured by evaluation of the sensitive plant and animal maps (MBA/RECON 1989, 1990) as updated by Phase 2 RMP field mapping efforts which include measured areas of the populations to establish the number of individuals within those populations. Status reports shall be submitted with each SPA to ensure long-term documentation of population status.

*Policy 2.9*

Preservation of a minimum of 95% of the vernal pool habitat on the Ranch supporting vernal pool indicator species (as defined in the vernal pool report). Necessary State and/or Federal permits would be obtained in accordance with Section 404 of the Clean Water Act, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game implementing Section 1600 of the California Fish and Game Code.

**Standards:**

1) In conjunction with the first SPA in the Phase 2 RMP, develop a Vernal Pool Preservation and Management Plan.
2) Establish a vernal pool preserve of no less than 330 acres on Otay Mesa south of the Otay River to include all vernal pools identified by the California Department of Fish and Game (Bauder 1986) as J23, J24, J25, J30 and identified sensitive portions of J29 (see Figure 23).
3) Preserve a minimum of 95% of the Otay Ranch distribution of the State- and federally-listed San Diego button-celery (*Eryngium aristulatum* var. *parishii*) and 100% of the State-listed Otay Mesa mint (*Pogogyne nudiuscula*), in locations identified in the vernal pool report (DUDEK 1992).
4) Assure the continued survival of little mousetail (*Myosurus minimus* var. *apus*) and San Diego navarettia (*Navarettia fossalis*) on Otay Ranch through preservation of present known localities for these species on the Ranch plus a combination of enhancement, restoration, and management efforts.
5) Develop a vernal pool restoration plan to achieve the following:
   -- restore the biota of individual, badly degraded vernal pools;

-- increase diversity and frequency of native biota in all disturbed vernal pools;
-- preserve and enhance vernal pools on K-6 where little mousetail occurs;
-- reduce the effect of alien plants;
-- enhance the populations of sensitive species;
-- stabilize soils on mounds and in watershed areas;
-- provide research and educational opportunities.

***Policy 2.10***

Preserve and enhance wetlands.

**Standards:**

1) No net loss of in-kind wetland quality or quantity in accordance with the standards of the U.S. Army Corps of Engineers (COE), implementing Section 404 of the Clean Water Act, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game implementing Section 1600 of the California Fish and Game Code.

2) If feasible, opportunities and plans for mitigation banks shall be developed in conjunction with preparation of wetlands enhancement plans for Otay River Valley and the vernal pool preservation plan in conjunction with the Phase 2 RMP and the first SPA. All revenue generated by wetlands mitigation banks shall be used to fund Preserve activities.

**Guidelines:**

1) Include at least 90% of identified wetlands within the Preserve.

2) Where feasible, preserve wetlands not included within the Preserve within non-Preserve open space.

3) Conduct a wetland delineation for each SPA development using the methodology appropriate for the permit or approval being sought.

4) Compensate for impacts to wetlands outside the Preserve by wetland creation, restoration, and enhancement within the Preserve, primarily in the Otay River Valley. Potential locations of wetlands or waters of the U.S. outside the Preserve, as defined by USGS blueline streams, are illustrated in Figure 12.

5) When and where feasible, wetland creation, restoration, and enhancement within the Preserve shall be completed prior to actual habitat disturbance for which these activities are considered mitigation.

***Policy 2.11***

Preserve habitat for raptor nesting, roosting, and foraging.

**Guideline:** Incorporate into the Preserve areas that support raptor populations as identified in the Raptor Habitat/Foraging Study.

***Policy 2.12***

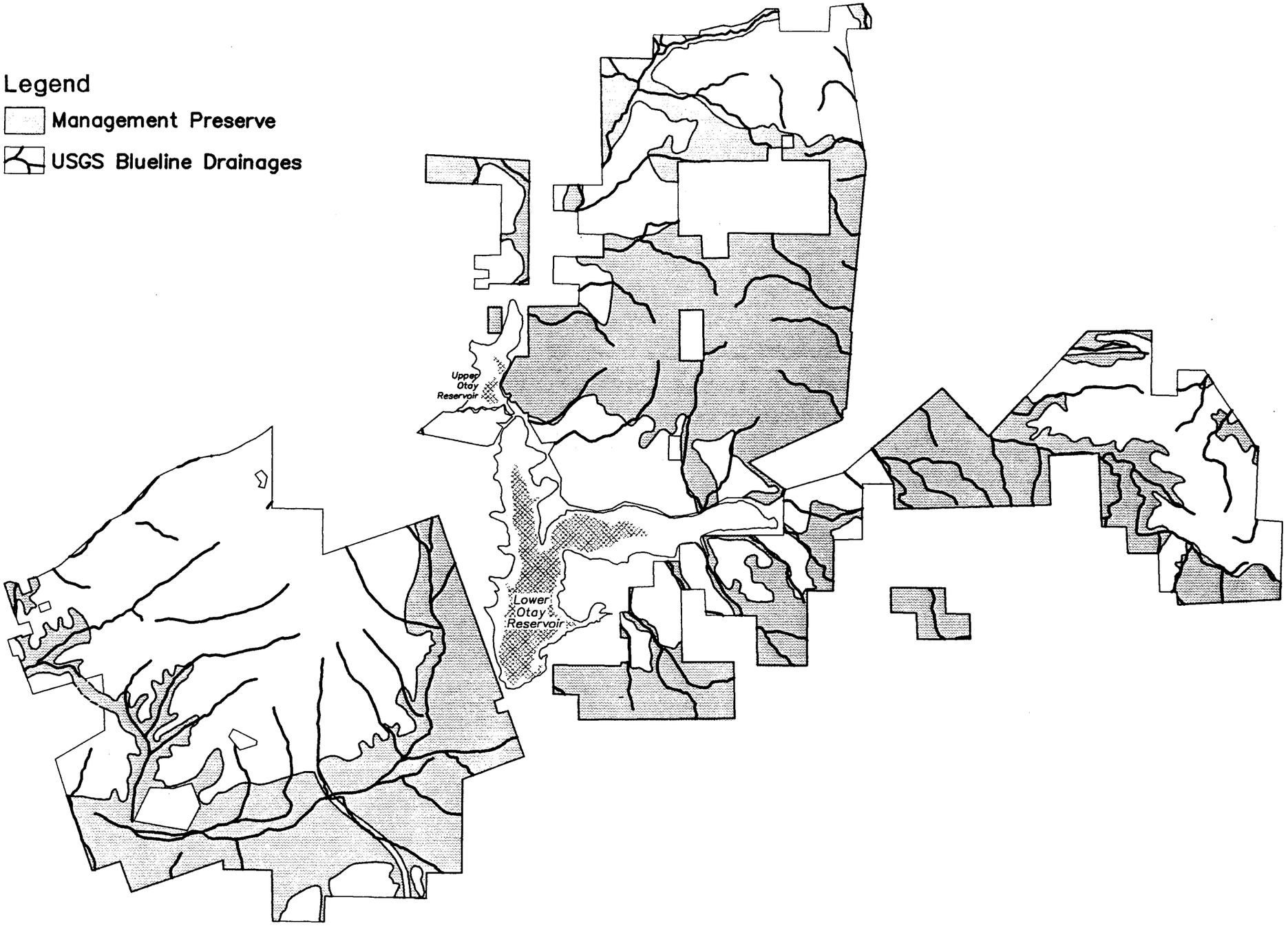
Preserve significant cultural resources.

**Standard:** Implement the recommended program for a systematic parcel-by-parcel cultural resources investigations to be completed in conjunction with the first SPA within each of the three larger parcels.

Legend

Management Preserve

USGS Blueline Drainages




1" = 5500'

Phase 1 Otay Ranch RMP

**Non-Preserve Drainage Areas**

FIGURE 12

**Guideline:** Because numerous cultural resource sites are located within the Otay River Valley, potential impacts to these resources must be assessed prior to implementation of riparian restoration activities and when plans are finalized for the Otay Valley Regional Park. The preferred form of impact mitigation for sites that meet the significance definition under the County Resource Protection Ordinance (see RPO Section 3, Definitions, Definition S, Significant Prehistoric or Historic Sites) is site avoidance, although capping, landscaping and other passive uses may be appropriate. For sites that may be considered to be important under CEQA, but may not be considered to be important under RPO, salvage and data recovery may be considered to be appropriate.

***Policy 2.13***

Design drainage improvements within identified floodplains to provide for adequate flood protection and sensitivity to biological resources.

**Standards:**

1) Flood control plans shall be in conformance with RMP policies protecting sensitive resources and with State and Federal wetland regulations.

2) Concrete or rip-rap flood control channels shall be prohibited within the Preserve. Drop structures and armour lock structures shall be avoided. Minimal structural improvements may be permitted for road and utility crossings and for the protection of the public health, safety and general welfare.

3) Drainage improvements shall not result in an increase in erosion or sedimentation that would adversely affect Preserve resources.

4) Flood control plans should address potential erosion hazards in Salt Creek and Wolf canyons.

**Guideline:** Detention basins and energy dissipators may be used.

***Policy 2.14***

Provide opportunities for demonstration agricultural activities within the Preserve.

**Standard:** A site which supports prime or statewide important soils should be located near proposed composting facilities and Bird Ranch. A plan for the size and operation of the demonstration agricultural activities will be subject to review and approval of the Preserve Owner/Manager and/or the Otay Valley Regional Park management and shall be submitted concurrent with the conveyance for this area or prior to adoption of the last SPA on the Otay Valley Parcel, whichever occurs first. In addition to the demonstration agricultural site, sites should be made available for smaller "community gardens" adjacent to or within individual villages. Some community gardens may be located within open space areas being maintained by an open space maintenance district, with specific design and maintenance issues to be addressed at the SPA Plan review.

## OBJECTIVE 3: - ENHANCE AND RESTORE SENSITIVE RESOURCES

**Enhance, restore, and re-establish sensitive biological resources (species and habitats) in disturbed areas where the resources either formerly occurred or have a high potential for establishment. (See Chapter 4 for restoration implementation procedures.)**

***Policy 3.1***

Identify areas within the Preserve that possess high potential for habitat restoration.

**Standard:** Conceptual locations of potential restoration areas are illustrated on Figures 19-22 of this document.

**Guideline:** The quantity of area to be restored shall be based on the type, location, quality, and amount of habitat disturbed, and mitigation requirements and ratios as described in Chapter 4.

***Policy 3.2***

Restoration programs intended to mitigate for disturbance of sensitive habitats associated with development of Otay Ranch shall be funded and designed by the landowner in coordination with the Preserve Owner/Manager and the appropriate jurisdiction. Implementation of such restoration programs shall be by an appropriate entity acceptable to the Preserve Owner/Manager and the appropriate jurisdiction.

***Policy 3.3***

Restoration programs may be implemented for purposes other than compensation of impacts associated with development of Otay Ranch. Such programs shall be funded, designed and implemented by the Preserve Owner/Manager or other entity acceptable to the Preserve Owner/Manager.

***Policy 3.4***

Develop a restoration program for coastal sage scrub (and maritime succulent scrub) habitat. (See the Appendix for the conceptual restoration plan). Coastal sage scrub restoration activities shall commence prior to or concurrent with approval of the first SPA within Otay Ranch and shall have achieved success, based on performance standards included in Chapter 4 prior to or concurrent with approval for any development resulting in significant impacts to coastal sage scrub habitat occupied by California gnatcatchers on the Proctor Valley or San Ysidro Mountains parcels.

**Standards:**

1) A conceptual restoration plan for coastal sage scrub habitat is included in the Phase 1 RMP. (The Appendix to of this document contains this plan).
2) Restoration programs shall be implemented on a SPA-by-SPA basis in accordance with Phase 2 RMP.
3) The success of a specific coastal sage scrub restoration effort will be measured by the ability of the restored habitat to support native wildlife species. An increase in bird species richness will be used as an indicator of "habitat suitability."

**Guidelines:**

1) Restoration and enhancement of disturbed coastal sage scrub, coastal sage scrub/non-native grassland, and non-native grassland/coastal sage scrub may be accomplished through the following general procedures:

   - Prevention of further disturbance.
   - Removal and control of exotic species.
   - Augmentation of shrub cover by additional plantings and/or hydroseeding.

- Use of cuttings, seeds, and other vegetative parts from within the degraded habitat.
- Monitoring and maintenance of enhancement efforts.

2) Recreation of Diegan coastal sage scrub and maritime succulent scrub in areas that currently support agriculture and non-native grasslands can be accomplished through the following general procedures:

- Prevention of further disturbance.
- Removal and control of exotic species.
- Use of topsoil from areas of coastal sage scrub to be impacted by project implementation.
- Revegetation with native coastal sage scrub species.
- Use of cuttings, seeds, and other vegetative parts from areas of undisturbed habitat adjacent to the revegetation site.
- Use of temporary irrigation, if necessary.
- Monitoring and maintenance of revegetation efforts.
- Implementation of remedial efforts.
- Use of reclaimed water where appropriate.
- Incorporation of sensitive species specific habitat requirements into revegetation plan.

***Policy 3.5***

Develop a restoration program for riparian habitats. (See Chapter 4 for description of conceptual restoration plan.)

**Standards:**

1) A conceptual restoration plan for riparian habitats shall be included in the Phase 1 RMP. (The Appendix to this document contains this plan).

2) Restoration programs shall be implemented on a SPA-by-SPA basis in accordance with Phase 2 RMP.

3) The success of a specific riparian restoration effort will be measured by the ability of the restored habitat to support native wildlife species. An increase in bird species richness will be used as an indicator of "habitat suitability."

**Guidelines:**

1) Restoration and enhancement of riparian habitats may be accomplished through the following general procedures:

- Prevention of further degradation.
- Removal and control of exotic species, primarily tamarisk, tree tobacco, giant cane, and cocklebur.
- Excavation and grading where necessary to approach water table.
- Revegetation with native riparian species.
- Use of cuttings, seeds, and other vegetative parts from riparian areas adjacent to revegetation site.
- Use of temporary irrigation, if necessary.
- Monitoring and maintenance of revegetation efforts.
- Implementation of remedial efforts.
- Use of reclaimed water where appropriate.
- Incorporate sensitive species specific habitat requirements into revegetation plans.

2) The goal of the riparian revegetation efforts, particularly in the Otay River Valley, is the creation of a mosaic of wetland habitats, with southern willow scrub alternating with patches of freshwater marsh and areas of sycamore-alluvial woodland.

***Policy 3.6***

Develop a restoration program for native grassland habitats. (See Chapter 4 for description of conceptual restoration plan.)

**Standards:**

1) A conceptual restoration plan for native grassland habitats shall be included in the Phase 1 RMP. (The Appendix to this document contains this plan).
2) Restoration programs shall be implemented on a SPA-by-SPA basis in accordance with Phase 2 RMP.

**Guidelines:**

- Prevention of further degradation.
- Removal and control of exotic species.
- Revegetation with native grassland species.
- Use of cuttings, seeds, and other vegetative parts from native grassland areas adjacent to revegetation site.
- Use of temporary irrigation, if necessary.
- Monitoring and maintenance of revegetation efforts.
- Implementation of remedial efforts.
- Use of reclaimed water where appropriate.

- Incorporation of sensitive species specific requirements into revegetation plan.

***Policy 3.7***

Develop a vernal pool restoration program.

**Standard:** Vernal pool restoration standards and guidelines are described in Policy 2.9

***Policy 3.8***

In coordination with USFWS and CDFG, the Preserve Owner/Manager shall develop a program for creation or enhancement of habitat for sensitive species that were formerly, or are occasionally present (e.g., as least Bell's vireo) on Otay Ranch.

**Standards:**

1) Prepare a conceptual riparian revegetation plan to create habitat in the Otay River Valley of acceptable quality for breeding and nesting of least Bell's vireo (*Vireo bellii pusillus*).
2) Investigate the possibility of habitat enhancement and re-introduction of quino checkerspot (*Euphydryas editha quino*) in the vernal pool preservation in conjunction with Phase 2 RMP.
3) Continue to identify potential restoration opportunities for additional threatened and endangered species as they are listed by the resource agencies.

## OBJECTIVE 4 - WILDLIFE CORRIDORS

**Establish functional connections for onsite resources and integrate the Preserve into a larger regional system.**

*Policy 4.1*

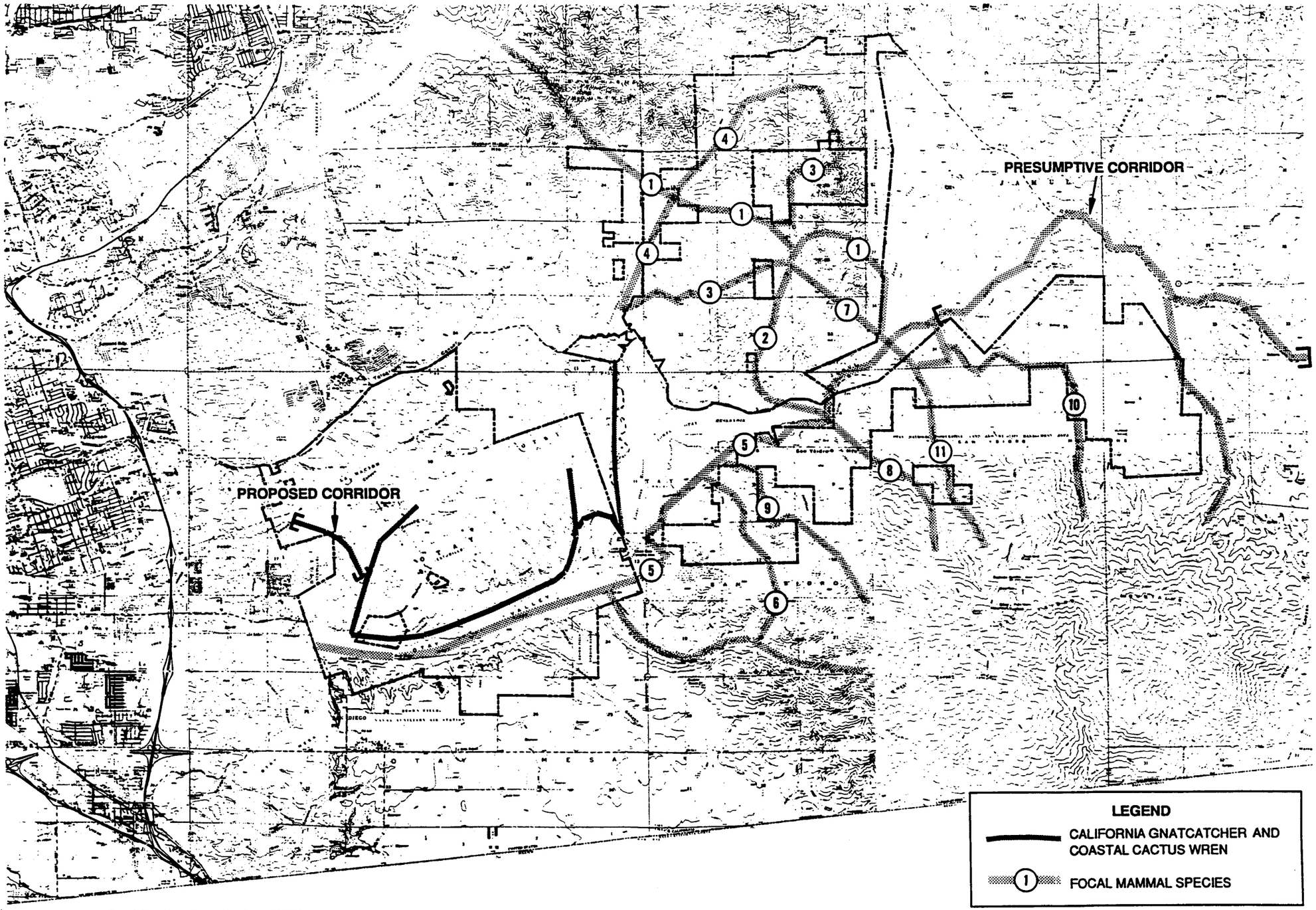
Design the Preserve to provide adequate habitat linkages and wildlife corridors to accommodate gene flow and wildlife movement.

**Standards:**

1) Incorporate important wildlife corridors, as identified by the Wildlife Corridor Study (Ogden, 1992), into the Preserve (see Figure 13).
2) Integrate resource components of the Preserve with the Otay Valley Regional Park in a manner consistent with the goal and objectives of the Resource Management Plan.
3) Optimize linkages offsite with private open space and other regional and subregional habitat plans.

**Guidelines:**

1) Incorporate all regional wildlife corridors into the Preserve.
2) Incorporate a majority of the local wildlife corridors into the Preserve, applying criteria established by OGDEN (1992) for preservation of local corridors at the SPA level.
3) Where feasible, provide linkages between all habitat patches, both within the Preserve and to offsite preserved open space. Potential connections are illustrated on Figure 10 of this document.




SOURCE: Baldwin Otay Ranch Wildlife Corridor Studies, Ogden 1992

Phase 1 Otay Ranch RMP

## Regional Wildlife Corridors

FIGURE 13

4) Provide appropriate buffers for corridors as recommended in the Wildlife Corridor Study.

5) Incorporate wildlife crossings into design of infrastructure facilities.

6) Provide for a direct riparian connection for the Otay River from Lower Otay Lake westward to San Diego Bay by preserving and restoring a continuous riparian habitat along the portion of the river within Otay Ranch.

7) Implementation of resource preservation and enhancement plans shall be consistent with and coordinated with the Otay Valley Regional Park plan, if this plan is adopted.

***Policy 4.2***

Conform to standards approved by the Scientific Review Panel (SRP) for the Natural Communities Conservation Plan (NCCP) as they pertain to coastal sage scrub regarding biological resources data collection requirements.

**Standard:** Assure that biological data for Otay Ranch are acceptable to the Scientific Review (SRP) panel so that, if feasible, the Preserve can be incorporated into a larger South County NCCP.

## OBJECTIVE 5 - PRESERVE MANAGEMENT AND MAINTENANCE

**Effectively manage the Preserve to protect, maintain, and enhance resources in perpetuity.**

*Policy 5.1*

Select a Preserve Owner/Manager who is acceptable to the City of Chula Vista and the County of San Diego. Advice of the U.S. Fish and Wildlife Service and the California Department of Fish and Game will be sought prior to final selection of a Preserve Owner/Manager.

**Standards:**

1) The Preserve Owner/Manager shall be selected prior to or concurrent with approval of the first SPA in the Phase 2 RMP.
2) The Preserve Owner/Manager may be a local government, a public resource agency, a non-profit organization, or any other entity or entities acceptable to the landowner, City of Chula Vista, and County of San Diego.
3) The Preserve Owner/Manager may be an entity or entities working in a cooperative arrangement to fulfill the duties of the Owner/Manager.
4) The selection process may be initiated by a Request for Qualifications (RFQ) or similar announcement, followed by a recruitment/interview process.
5) Review and selection of the Preserve Manager shall be conducted jointly by the landowner, the City of Chula Vista, and the County of San Diego.

6) It is desirable for candidates for Preserve Owner/Manager to have the following experience and capabilities:

- Demonstrated experience managing biological resources including endangered species.
- At least 5 years of previous experience with law enforcement and access control.
- Demonstrated ability to interact effectively with local and regional conservation agencies, recreational agencies, and the local community.
- Prior experience in coordination with individuals involved in ongoing scientific research.
- Demonstrated ability to coordinate continued monitoring efforts of the Preserve's biota, as shown by staff experience and existing programs.
- Cultural resource management experience.
- Demonstrated previous experience in long-term management of large (greater than 10,000 acres) open space areas with numerous sensitive species.
- Demonstrated ability to efficiently manage personnel and finances over a long (10+ years) term.
- Ability and willingness to cooperate with local and regional agencies and direct experience in working with governing boards and/or advisory committees representing such agencies.

***Policy 5.2***

Define the responsibilities of the Preserve Owner/Manager in the Phase 1 RMP (see Chapter 4).

**Standard:** Responsibilities of the Preserve Owner/Manager shall include, but not be limited to, the following:

-- Maintenance of existing high quality resources through the prevention of further disturbance, including controlling access to the Preserve, prohibiting off-road traffic, enforcing "no trespassing" rules, and curtailing activities that degrade resources, such as grazing, shooting, and illegal dumping.

-- Monitoring of resources to identify changes in the quality and quantity of sensitive resources and habitats.

-- Implementation and monitoring of restoration activities, as appropriate (it is understood that some restoration activities may be carried out by individual Otay Ranch developers in coordination with the Preserve Owner/Manager).

-- Implementation of maintenance activities including removal of trash, litter, and other debris, maintenance of trail systems, removal and control of exotic plant species (weeds), and control of cowbirds through trapping efforts.

-- Development of educational facilities and interpretive programs.

-- Implementation and/or accommodation of research programs.

-- Coordination with local jurisdictions, resource agencies, and adjacent ownerships.

-- Coordination with the Otay Valley Regional Park JEPA, or subsequent park planning entity, regarding issues associated with Otay Valley Regional Park.

-- Enforcement activities.

-- Review of RMP Amendments, Preserve boundary adjustments, infrastructure plans, plans for active recreational uses with the Preserve, plans for land uses adjacent to the Preserve and other activities/studies as identified in the RMP.

***Policy 5.3***

Develop and implement a strategy that facilitates effective, long-term management of the Management Preserve consistent with the goal of the RMP.

**Standard:** Management activities shall be undertaken to ensure no reduction in habitat values and no adverse impacts to biological resources included within the Management Preserve.

**Guidelines:**

1) Establish programs to monitor and evaluate the status of these valuable resources (see Policy 5.4).

2) Implement enhancement and/or management efforts necessary to rectify any reduction in habitat quality or sensitive species populations due to human activities and/or natural occurrences.

3) Management activities shall conform with potential State of California NCCP or guidelines should they be applied to Otay Ranch in the future.

4) The Preserve Owner/Manager shall have the authority to curtail or restrict activities or uses that are shown to have a temporary or long term negative impact on resources within the Preserve.

***Policy 5.4***

Establish a comprehensive monitoring program for the biota of the Preserve in conjunction with the Phase 2 RMP.

**Standard:** Develop and implement an annual monitoring program designed to identify changes in quality and quantity of onsite biological resources, including sensitive wildlife species, sensitive plant species, and sensitive habitat types.

**Guidelines:**

1) Monitoring shall include, but not be restricted to, focused surveys and population estimates of State- and Federally-recognized plants and wildlife species, use of wildlife corridors, and assessments of habitat quality.

2) Annual monitoring reports summarizing the results of monitoring efforts shall be submitted to the City, County, and resource agencies.

3) Based on the monitoring reports, the City, County, and resource agencies shall evaluate RMP performance and, if necessary, recommend program modifications.

4) Monitoring programs shall include performance standards.

5) Habitat restoration efforts shall be monitored.

6) The effects of activities associated with the interpretive center and the effective use of educational and outreach programs shall be monitored.

7) Monitoring of the Preserve's sensitive resources may be integrated with mitigation monitoring and reporting programs (MMRPs) carried out in accordance with CEQA review of individual developments within Otay Ranch.

8) The Preserve's monitoring program shall be submitted with the Phase 2 RMP with input from the Preserve Manager.

***Policy 5.5***

Monitoring programs associated with management of the Preserve shall conform to and carry out programs required by CEQA (PRC 21081.6) but shall not replace other monitoring programs required in conjunction with site-specific environmental review of individual development within Otay Ranch.

***Policy 5.6***

Develop and obtain City and County approval (in coordination with the Owner/Manager) of a plan for the orderly conveyance of dedicated parcels of land to the Preserve.

**Standard:** The conveyance plan shall be developed in accordance with the conveyance criteria outlined below. A conveyance schedule shall be prepared in conjunction with the Phase 2 RMP.

**Guidelines:**

1) First priority shall be given to the conveyance of highest quality resources (such resources may include vernal pools on Otay Mesa, Diegan coastal sage scrub habitat in the Salt Creek area, gnatcatcher population areas in western San Ysidro and central Proctor Valley areas, or potential wetlands restoration areas in the Otay River Valley [depending upon the status of regional park plans and wetlands restoration plans at the time Otay River Valley parcels are conveyed.]

2) Give first priority to the conveyance of "most vulnerable" areas - those most subject to potential and ongoing disturbance.

3) Conveyance shall occur in an orderly manner beginning with an identified "keystone" parcel [e.g., vernal pool areas, Salt Creek area, Otay River Valley, Central Proctor Valley, western San Ysidro] and proceed to the next logical block of land.

4) Convey areas occur areas with restoration potential early in order to begin long-term research activities early in the process. [Restoration activities may occur in areas proposed for inclusion in the Preserve prior to their conveyance.]

5) The Preserve Owner(s)/Manager(s) shall participate in preparation of the conveyance schedule.

6) Cumulative acreage conveyed shall be greater than or equal to cumulative acreage of the proposed SPA.

7) General guidelines regarding in-kind mitigation and no net loss of wetlands shall be considered in development of a conveyance schedule, particularly in the context of applicable State and Federal regulations [it is understood that in-kind mitigation may not always

be the preferable approach to achieve the goal of establishing a functioning, manageable preserve.]

8) Applicable State and Federal regulations regarding protection of sensitive habitat and species shall be followed.

***Policy 5.7***

Any change in the order of conveyance shall be considered only during the review and approval process for a SPA, and shall not require a General Plan Amendment. The jurisdiction processing the SPA shall advise and consult with the other agency before approval of a change in order of conveyance. However, any change in the order of conveyance is subject to joint approval by the City of Chula Vista and County of San Diego, if the land under consideration for conveyance is in a different jurisdiction than the SPA under consideration.

***Policy 5.8***

Changes in land ownership resulting from the sale or transfer of ownership of any SPA shall not affect the conveyance of land to the Preserve.

**Standard:** The development of any village or SPA, even if conveyed to a third party, shall be accompanied by the conveyance of the appropriate parcel to the Preserve. To the extent that conveyance of a specific parcel of land is required, it shall be a condition of approval for the first Tentative Map of that SPA.

**Guidelines:** If the landowner sells a specific village or SPA to a third party, the portion of the Preserve associated with that village can be conveyed to the Preserve at the time of sale or as a condition of approval of the first Tentative Map for that village or SPA.

***Policy 5.9***

Preserve lands become the property of the Owner/Manager and are not available for development.

***Policy 5.10***

Include a reversionary clause in the Management Preserve ownership agreement that will prevent resale or use of the Management Preserve for any development or activities not permitted by the adopted RMP.

**Standard:** In the event that the selected Preserve Manager/Owner is, for any reason, unable or unwilling to manage the Preserve in a manner consistent with the goal and policies of the RMP, ownership of the Preserve shall be transferred to the County of San Diego, City of Chula Vista, or other receiving entity acceptable to the City, County, and landowner. Such a receiving entity shall transfer ownership to a qualified owner/manager reviewed by the resource agencies (USFWS, CDFG) and acceptable to the County of San Diego and the City of Chula Vista. Said transfer should be implemented as soon as possible, and not later than six months after exercising the reversionary clause, unless extraordinary circumstances require, as determined by the County Board of Supervisors and the City of Chula Vista City Council prior to expiration of the six months, additional time.

***Policy 5.11***

Develop a work program that establishes the timing and responsibilities for the provision of a nature interpretive center within the Preserve.

**Standard:** As part of the Phase 2 RMP, identify the potential locations of a nature interpretive center within the Preserve.

**Guidelines:**

1) The Nature Interpretive Center shall be designed to provide an educational opportunity to the public through providing a look at the natural history and ecology of the existing ecosystems, cultural history and paleontological resources on Otay Ranch.

2) Design features for the Nature Interpretive Center shall include facilities that can accommodate educational meeting and display rooms yet be in scale and compatible with the surrounding setting.

***Policy 5.12***

Identify the costs related to RMP planning, design, research, construction, and management activities and develop a funding strategy.

**Standard:** As part of the Phase 2 RMP, a cost estimate for RMP implementation shall be prepared, funding alternatives shall be identified and evaluated, and the implementation plan shall be prepared.

**Guidelines:**

1) Expenditures may include, but not be limited to, the following:
   - -- Salaries for staff.
   - -- Vehicles for patrolling the Preserve.
   - -- Construction and maintenance of operations center.
   - -- Fences, signs, and interpretive and educational materials.
   - -- Staffing and training of personnel for annual monitoring programs.
   - -- Construction and maintenance of an interpretive center.
   - -- Equipment necessary for monitoring and management.
   - -- Enhancement/restoration activities not considered to be mitigation as identified in Guideline 4.

2) A draft funding program shall be submitted for review in conjunction with review of the first SPA. The draft document shall be reviewed and adopted by the City of Chula Vista and County of San Diego, with the concurrence of the Preserve Owner/Manager and interested agencies. A final funding program shall be adopted prior to or concurrent with the approval of the first SPA. The program shall include (1) all sources of funding (not reliant on City or County general funds); (2) a five-year management plan; (3) a five-year budget; (4) proposed staffing; and 5) provisions for availability of initial start-up funds upon conveyance of the first parcel to the Preserve.

3) Prior to approval of each SPA Plan, the applicant must demonstrate that mitigation activities are financially feasible. If not, proper compensatory measures shall be implemented.

4) Financing mechanisms for restoration activities conducted within the Preserve that are regarded as mitigation for development activities within Otay Ranch shall be borne by individual developers within Otay Ranch.

5) Ensure provision of adequate funds to initiate appropriate management activities with conveyance of the first parcel to the Preserve.

6) Develop a cost estimate for design and construction of an interpretive center and investigate funding mechanisms for its ultimate development.

***Policy 5.13***

Clarify the relationship between the Otay Ranch Resource Management Plan and the Otay Valley Regional Park JEPA.

**Standard:** The potential for the Otay Valley Regional Park JEPA to assume ownership and management responsibility for the Otay River Valley and adjacent areas on the Otay Valley parcel, or portions thereof (particularly active recreation areas), shall be evaluated and funding sources identified in the Phase 2 RMP.

## OBJECTIVE 6 - PERMITTED USES

**Identify permitted land uses within the Preserve.**

*Policy 6.1*

Provide resource-related educational and interpretive programs to increase public sensitivity to, and awareness and appreciation of resources within the Preserve, consistent with the goal of the RMP.

**Standards:**

1) Under the direction of the Preserve Owner/Manager, an interpretive center(s) shall be constructed to display and interpret the biological, paleontological, and cultural resources present on Otay Ranch.
2) Construct a native plant nursery and/or botanic garden to be used for public education of native plants and plant communities and for restoration activities.
3) The sale of educational materials, books, and plants shall be allowed.

*Policy 6.2*

Active recreational use acreage within the Preserve shall not be greater than 400 acres and shall be consistent with the resource protection and enhancement goal, objectives and policies of the RMP.

**Standards:**

1) Siting and design of active recreational uses shall be subject to review and comment by the Preserve Owner/Manager in consultation with the JEPA of the Otay Valley Regional Park and

shall be consistent with plans for the Otay Valley Regional Park when adopted.

**Guidelines:**

1) Active recreation areas should be located in previously disturbed, non-sensitive areas.
2) Active recreation uses should be readily accessible from existing and planned public roads and should not intrude into core areas within the Preserve.
3) Active recreation uses should be clustered to minimize the extent of the edge between active recreation uses and sensitive resources within the Preserve.
4) Limited commercial uses/activities related to active recreation may be allowed within the 400 acres designated for active recreation.
5) Public parks and recreation facilities may be operated commercially by private operators within active recreation areas.
6) Emphasis shall be placed on providing the majority of the active recreation in the Otay River Valley to the extent that this is consistent with an Otay Valley Regional Park Plan, as may be adopted.

***Policy 6.3***

Provide a system of trails through the Preserve that is compatible with resource protection. This is considered to be a passive use and not a part of the 400-acre active recreational area.

**Standard:** A qualified firm shall be hired to design and implement construction of a trails system through the Preserve, following review and comment by the Preserve Owner/Manager and resource agencies.

**Guidelines:**

1) Site and design trails to be compatible with resource protection.
2) Provide interpretive signs.
3) Link Otay Ranch trails system with local community trails and regional trails systems, including trails such as those associated with the Otay Valley Regional Park.
4) Identify trail access points to the Preserve (e.g., parking lots and staging areas) that are consistent with resource protection goals.
5) The Preserve Manager may establish appropriate daily and seasonal limits on trail use in consultation with the appropriate jurisdictions.
6) Assure that the type, width, and intensity of trail uses is consistent with protection of resources being traversed.
7) Coordinate trail plans to link with trails planned for BLM property.
8) Provide limited equestrian trails in non-sensitive areas.
9) Wherever possible, use existing dirt roads for the trail system.
10) Provide bicycle trails only in areas that have no environmentally sensitive resources.
11) Design bicycle pathways in a manner that strongly discourages intrusion into adjacent environmentally sensitive areas.
12) Coordinate bicycle trails development with the City of Chula Vista's Greenbelt system.

***Policy 6.4***

Motorized vehicular access by the public to the Preserve shall be restricted.

**Standards:**

1) Motorized vehicular use within the Preserve shall be restricted to activities necessary for Preserve operation and maintenance and fire control.
2) Motorized vehicular use within the Preserve shall be restricted to roadways within the Preserve.
3) Where existing easements and other ingress/egress documents allow motorized access, such access shall be permitted but shall be restricted to the documented easement holder.
4) Motorized vehicular use associated with construction shall be permitted consistent with resource protection.
5) Off-road vehicles shall be prohibited.
6) Motorized vehicle use for emergency access shall be permitted. Fire roads shall be permitted within the Preserve only where absolutely necessary to assure public safety and control wildfires that may damage biological resources.

***Policy 6.5***

Identify restricted use areas within the Preserve.

**Standard:** Public access may be restricted within and adjacent to wetlands, vernal pools, restoration areas, and sensitive wildlife habitat (e.g., during breeding season) at the discretion of the Preserve Owner/Manager.

**Guidelines:**

1) The Preserve Owner/Manager shall be responsible for identifying and designating restricted use areas based on biological sensitivity.
2) Controlled access for scientific research and educational purposes shall be allowed at the discretion of the Preserve Owner/Manager.
3) The Preserve Owner/Manager shall have the authority to prohibit uses that have a negative effect on sensitive resources. If such negative effects are determined to be caused by an existing use, the Preserve Owner/Manager shall notify the appropriate jurisdiction before taking action.

***Policy 6.6***

Infrastructure may be allowed within the Preserve; conceptual locations of infrastructure facilities located within or crossing the Preserve are illustrated in Figures 14-18 (final infrastructure plans may deviate from the conceptual locations shown as long as Preserve resources are not adversely affected).

**Standard:** Develop a general infrastructure plan in conjunction with the first SPA of the Phase 2 RMP that provides standards and criteria to guide specific infrastructure siting and design during the phased buildout of Otay Ranch.

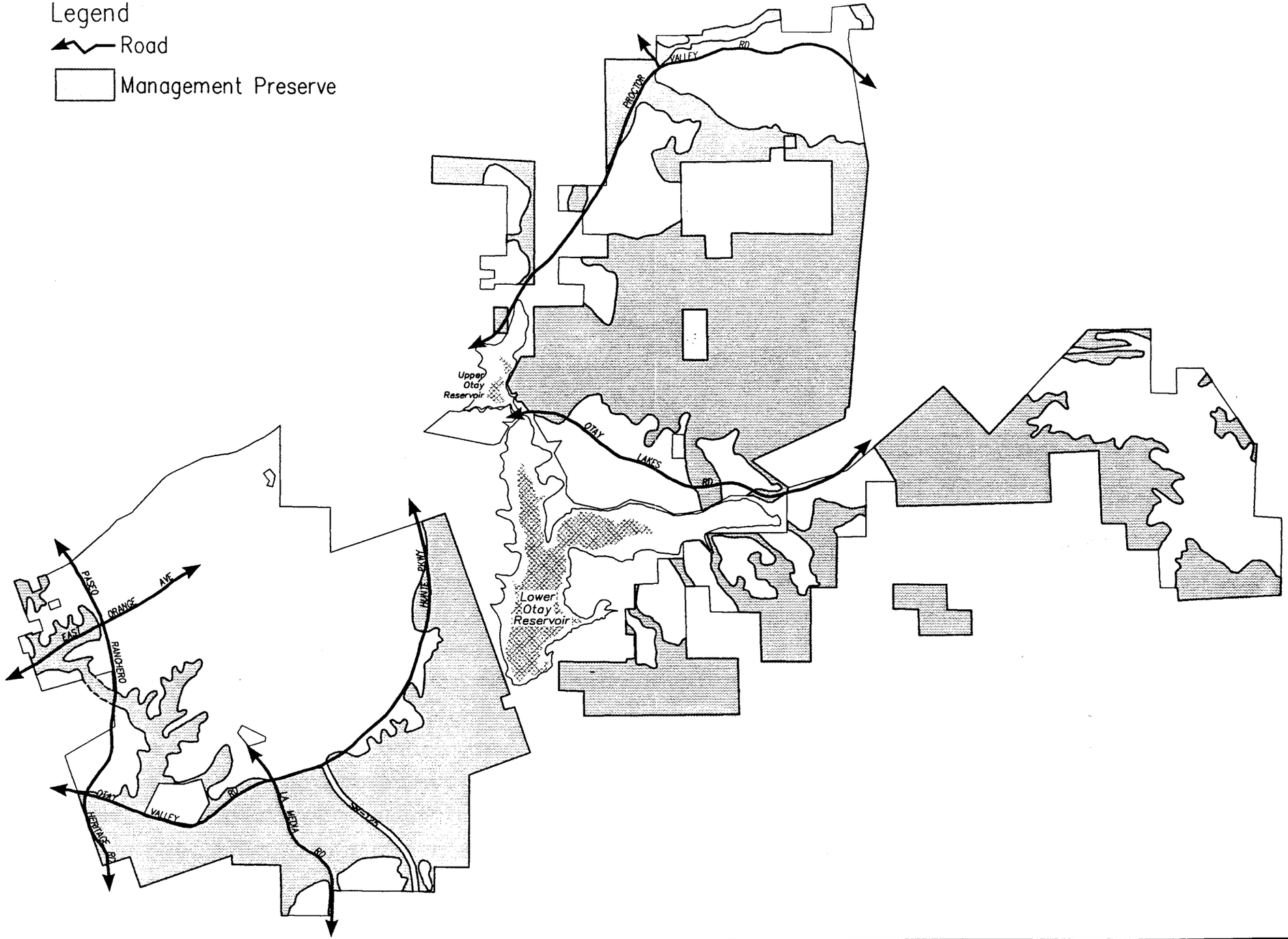
**Guidelines:**

1) Infrastructure facilities shall be sited and designed to minimize visual and other impacts to Preserve resources.
2) Infrastructure plans and their implementation shall be subject to review and comment by the appropriate jurisdictions in coordination with the Preserve Owner/Manager.

Legend

Road

Management Preserve




1" = 5500'

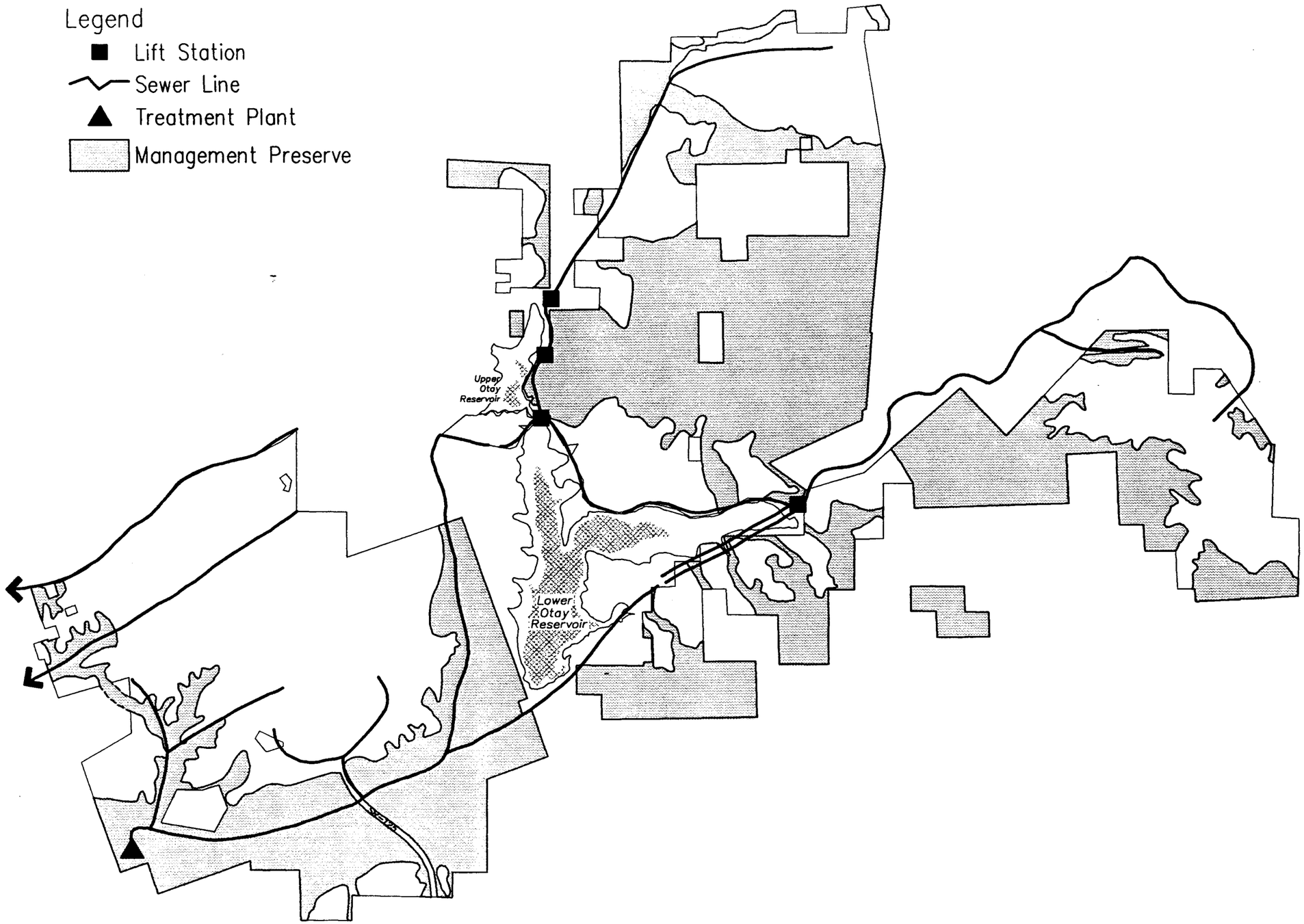
Phase 1 Otay Ranch RMP

**Public Roads**

FIGURE 14

Legend

- Lift Station
- Sewer Line
- Treatment Plant
- Management Preserve



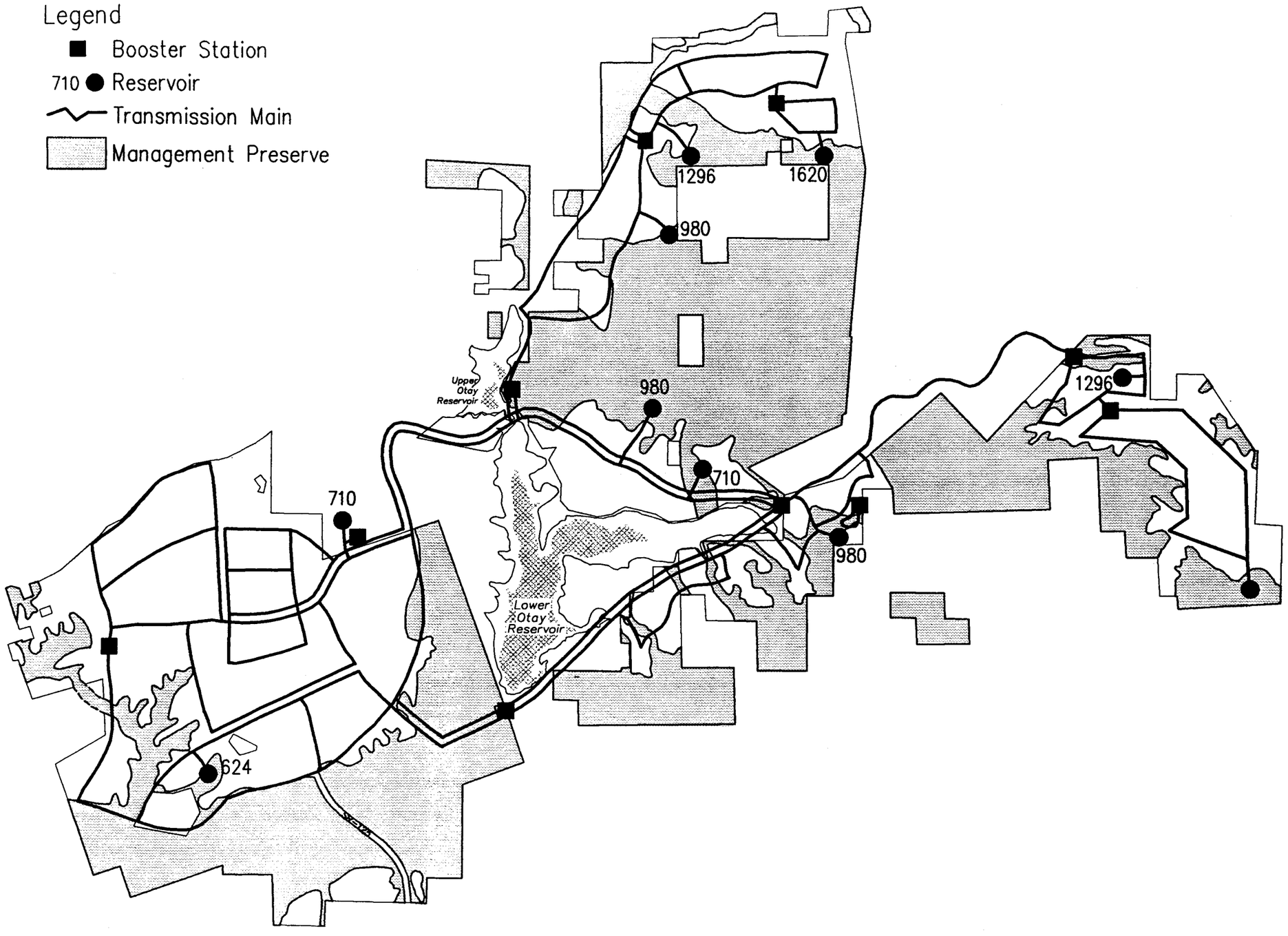

1" = 5500'

Phase 1 Otay Ranch RMP
**Sewerage Facilities**

FIGURE 15

Legend

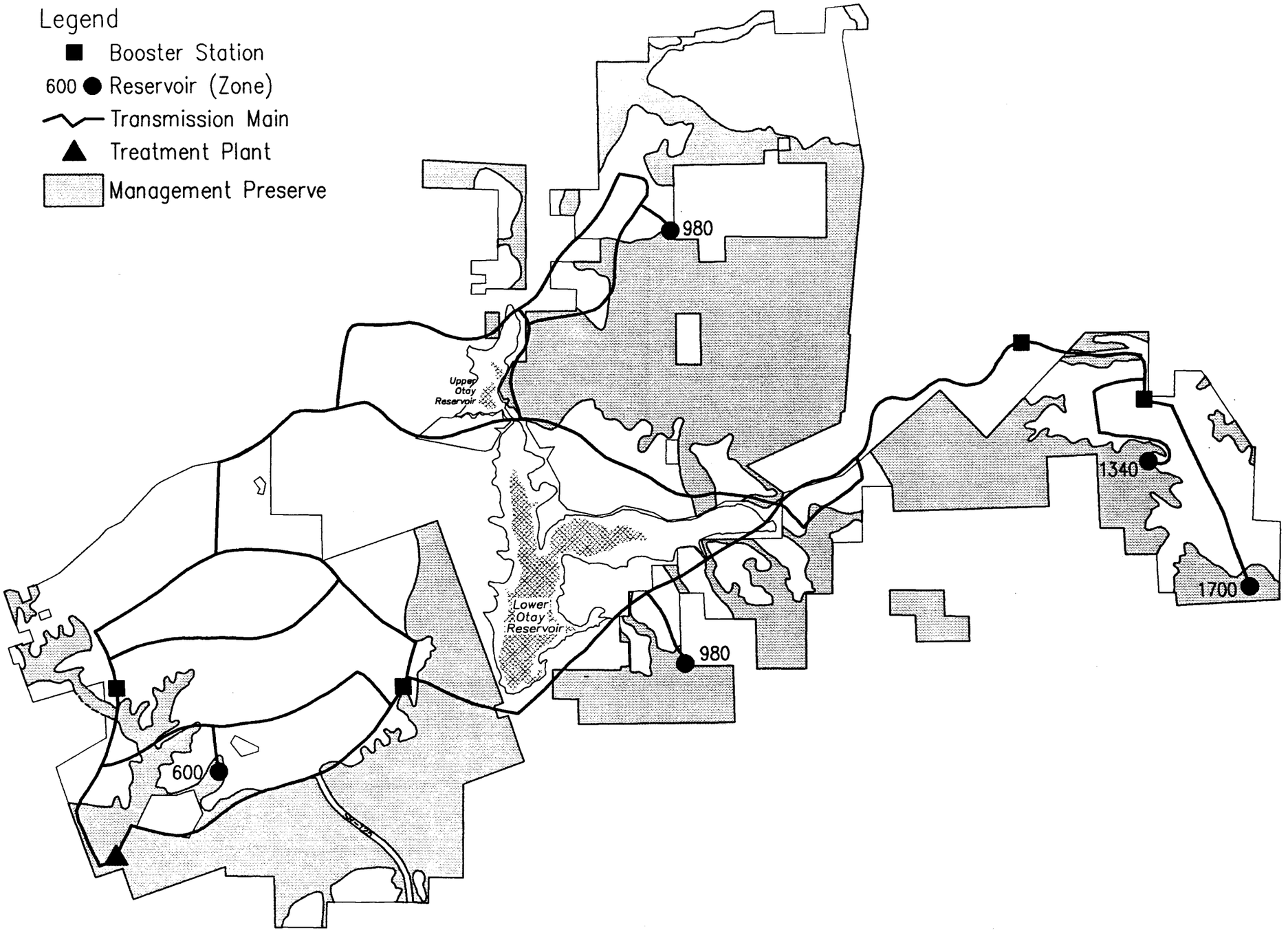
- Booster Station
- 710 Reservoir
- Transmission Main
- Management Preserve




1" = 5500'

Phase 1 Otay Ranch RMP
**Water Facilities**

FIGURE 16



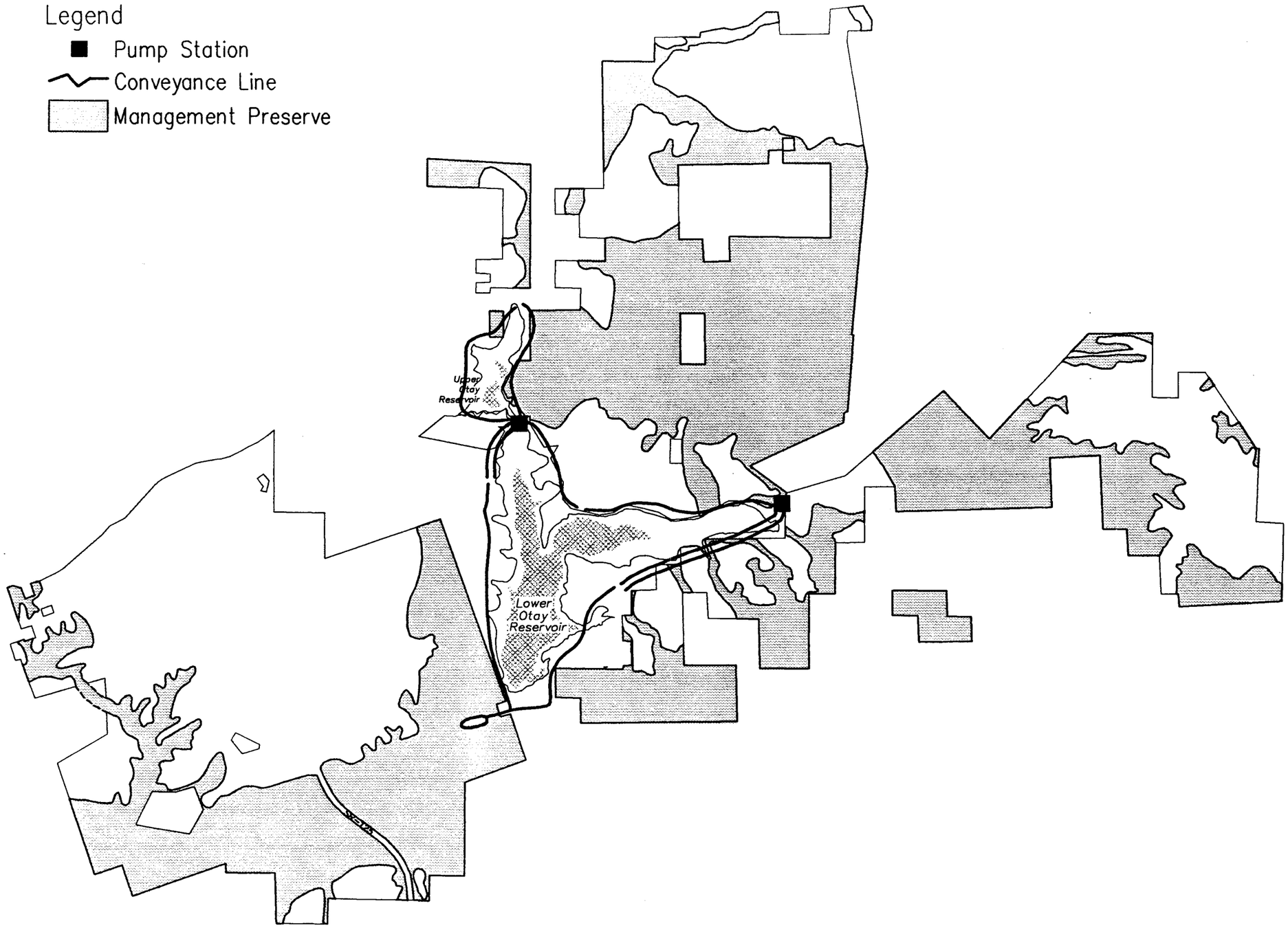

Phase 1 Otay Ranch RMP

**Reclaimed Water Facilities**

FIGURE 17

Legend

- Pump Station
- Conveyance Line
- Management Preserve




1" = 5500'

Phase 1 Otay Ranch RMP

**Urban Runoff Facilities**

FIGURE 18

3) CEQA mitigation requirements for impacts associated with infrastructure shall be reviewed by the appropriate jurisdictions and the Preserve Owner/Manager if such improvements are located within the Preserve.

4) When feasible, place infrastructure in roadways or outside the Preserve.

5) Mitigation measures for facilities shall conform to restoration/mitigation proposals of the RMP.

***Policy 6.7***

Fire roads shall be permitted within the Preserve only where absolutely necessary to assure public safety and control wildfires that may damage biological resources.

***Policy 6.8***

Ecologically necessary controlled burning may be permitted within the Preserve.

**Standard:** Where and when it is deemed appropriate for the enhancement of biological resources by the Preserve Owner/Manager, and subject to review by the County of San Diego and the City of Chula Vista with advice from the resource agencies (USFWS, CDFG), controlled burning shall be conducted within the Preserve.

## OBJECTIVE 7 - RESOURCE PRESERVE - ADJACENT LAND USES

**Identify allowable uses within appropriate land use designations for areas adjacent to the Preserve.**

***Policy 7.1***

All development plans adjacent to the edge of the Preserve shall be subject to review and comment by the Preserve Owner/Manager, the City of Chula Vista, and the County of San Diego to assure consistency with resource protection objectives and policies.

***Policy 7.2***

The "edge" of the Preserve is a strip of land 100 feet wide that surrounds the perimeter of the Preserve. It is not a part of the Preserve - it is a privately or publicly owned area included in lots within the urban portion of Otay Ranch immediately adjacent to the Preserve.

**Standard:** "Edge Plans" shall be developed for all SPAs that contain areas adjacent to the Preserve.

**Guidelines:**

1) The edge plan shall be prepared in consultation with a qualified biologist to ensure that proposed land uses will not adversely affect resources within the Preserve.
2) The edge plan shall include a list of plant species that may and may not be used for landscaping within the edge.
3) Fuel modification zones may be incorporated into the edge.

4) Development adjacent to the edge shall be restricted to development types that are least likely to impact specific adjacent biological resources.

5) Landscaping or block walls shall be used in appropriate areas adjacent to the edge to reduce impacts of noise and light.

6) No structures other than fencing and walls shall be allowed, and these shall be built and landscaped in such a way as to minimize visual impacts on the Preserve and the ORVP.

***Policy 7.3***

Protect and maintain biological integrity of unconveyed land adjacent to developing SPAs.

**Standards:**

1) Provide temporary fencing around perimeter of sensitive habitat areas and/or areas occupied by sensitive species adjacent to any SPA under construction to inhibit encroachment by construction traffic, etc.

2) Phase construction of SPAs immediately adjacent to sensitive biological resources to avoid indirect impacts. For example, construction activities that equal or exceed volume levels that inhibit breeding and nesting activities of the California gnatcatcher should be curtailed during the nesting period of the bird.

## OBJECTIVE 8 - RESOURCE PRESERVE - INTERIM LAND USES

**Identify interim uses and activities that may continue within the proposed Preserve until conveyance to the Preserve Owner/Manager.**

***Policy 8.1***

Existing conditions (uses) will not be allowed to negatively impact the sensitive resources in the Preserve.

**Standards:**

1) Existing agricultural uses, including cultivation and grazing, shall be permitted to continue as an interim activity only where they have occurred historically and continually.
2) No increase in irrigation shall be allowed, except for temporary irrigation that may be installed as part of restoration plans.
3) Grazing by sheep and goats shall not be allowed.
4) Cattle grazing shall be phased out in accordance with the conveyance program and Range Management Plan.

***Policy 8.2***

The County of San Diego or City of Chula Vista shall manage ongoing mineral extraction operations through the permit process.

***Policy 8.3***

Construction activities associated with infrastructure necessary for implementation of an approved development plan shall be allowed as an interim activity.

**Standard:** All construction activities shall take place in accordance with standards and criteria outlined in the conceptual infrastructure improvement plans as required in Policy 6.7. The improvement plans shall be subject to approval by the appropriate jurisdiction and review by the Preserve Owner/Manager.

***Policy 8.4***

Develop a Range Management Plan.

**Standard:** A Range Management Plan, which will depict the allowable interaction between grazing activity and sensitive resources, shall be developed as part of the submittal of the first SPA in the Phase 2 RMP. Under this plan, the most sensitive areas (i.e., areas that support sensitive species) shall have restricted access either by fencing or other appropriate method. The plan shall be subject to review and comment by the Preserve Owner/Manager, the City and the County.

## OBJECTIVE 9 - REGULATORY FRAMEWORK FOR FUTURE USES

**Provide a regulatory framework for future permitting by resource agencies and amendments to the RMP.**

***Policy 9.1***

Consult with resource agencies (i.e., U.S Army Corps of Engineers, USFWS, CDFG) at an early stage regarding impacts to resources under their jurisdictions.

> **Standard:** The Phase 1 RMP and future RMP documents shall be distributed for review by the resource agencies (USFWS, CDFG) prior to approval.

***Policy 9.2***

If feasible, negotiate a Memorandum of Agreement (MOA) (or separate memoranda) with the resource agencies concurrent with the Phase 2 RMP. The purpose of the MOA shall be to achieve concurrence on the RMP management approach and facilitate obtaining necessary Federal and State permits for the project at a later date.

***Policy 9.3***

Complete wetland delineations using the Federal Unified Method, or approved modification thereof, for each Specific Plan or SPA containing wetlands.

> **Standard:** Wetland delineations and permitting shall be in accordance with the standards and guidelines of the U.S. Army Corps of Engineers.

***Policy 9.4***

Identify areas subject to CDFG Section 1600 Streambed Alteration Agreements concurrent with site-specific environmental review of each Specific Plan or SPA.

***Policy 9.5***

The Otay Ranch Resource Management Plan is not a substitute for site-specific CEQA review of individual developments within Otay Ranch, however, it is anticipated that the Resource Management Plan, including attendant enhancements, programs and dedications, may mitigate the impacts of subsequent discretionary projects.

**Standards:**

1) Site-specific resource studies shall be completed for each SPA/Specific Plan.
2) Future resource studies will reflect changes in State and Federal agency status of sensitive plant and wildlife species.

**Guideline:** Where feasible, open space recommendations, recommendations for preservation of sensitive resources, and mitigation measures for biological and cultural resources required for each SPA shall be designed to complement and enhance the Preserve.

***Policy 9.6***

Establish a procedure for amending the RMP.

**Standard:** Following notice of public hearing, the RMP may be amended by the legislative body having jurisdiction over the use of land affected by the amendment, provided that all such amendments shall be subject to review and comment by the Preserve Owner/Manager, by the City of Chula Vista, and by the County of San Diego.

**Guidelines:**

1) Any amendment to the RMP is viewed as a discretionary action subject to CEQA review.

2) The overall size of the Preserve shall not be reduced by a Preserve boundary modification unless the County Board of Supervisors and the Chula Vista City Council are satisfied that the biological standards and guidelines set forth in the RMP can nevertheless be met and the Preserve design is not adversely affected by a Preserve boundary modification that results in a reduced acreage.

3) Amendments must be consistent with RMP goal, objectives and policies.

***Policy 9.7***

An amendment shall be required for any land use within the Preserve that is not specifically permitted by these policies, including the location of a university, landfill, or other development within the Preserve.

***Policy 9.8***

Preserve boundary modifications shall be made based on site-specific studies completed for individual SPA/Specific Plans.

**Standards:**

1) The overall size of the Preserve shall not be reduced by a Preserve boundary modification unless it can be demonstrated that the biological standards and guidelines can be met and the Preserve design is not adversely affected by a Preserve boundary modification that results in a reduced acreage.

2) All amendments to the RMP that would reduce the size or substantially revise the location of the Preserve boundary, or that would in any way delay the conveyance of all or portions of the Preserve to the Owner/Manager, shall require written approval by both the City of Chula Vista and the County of San Diego.

3) Boundary modifications shall conform with the setback criteria listed below. The locations of the most sensitive areas are illustrated in Figure 19.

4) Boundary modifications are intended for use at the SPA level to make minor refinements to include additional resources within the Preserve.

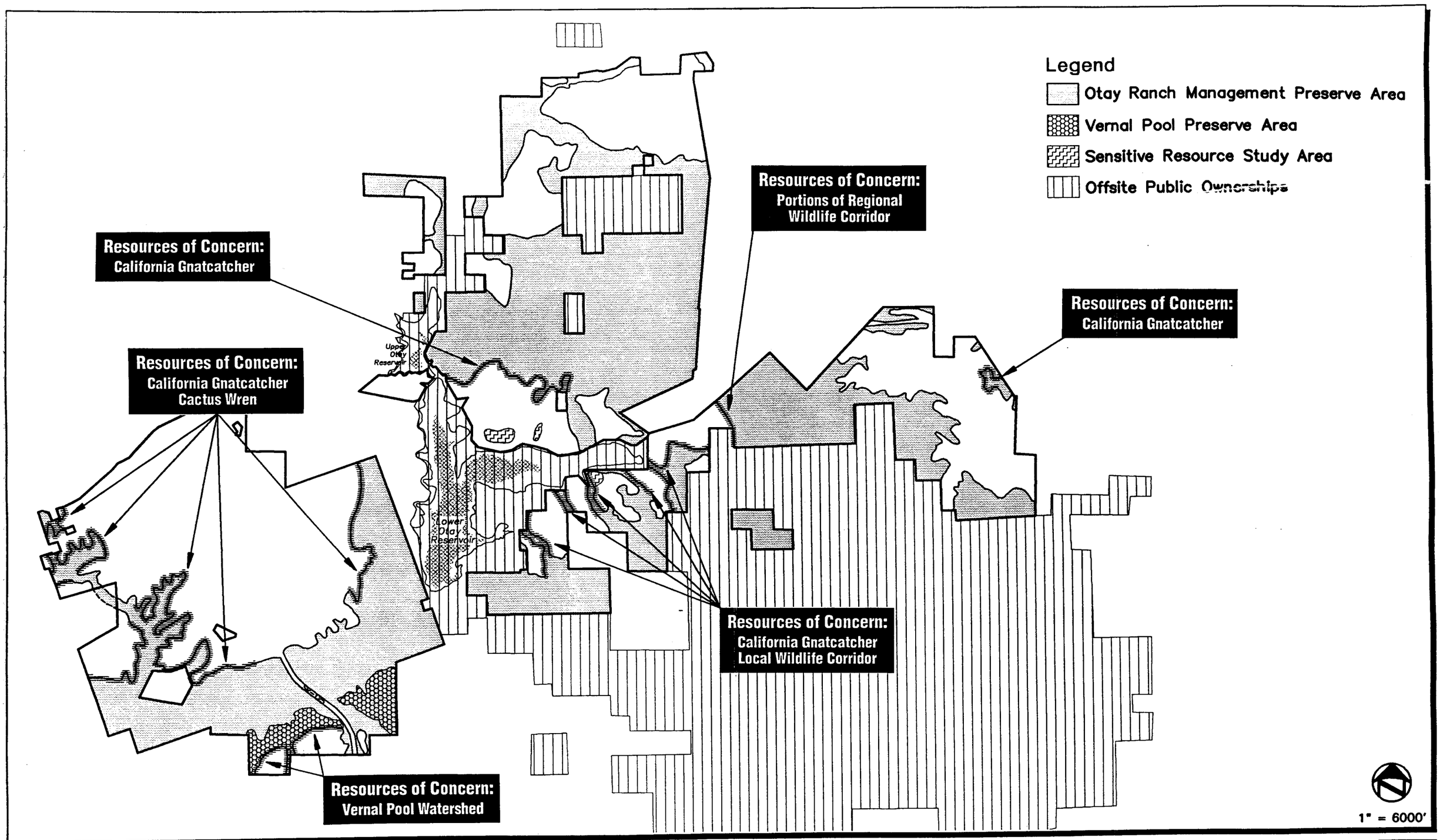
**Guidelines:**

1) Coastal sage scrub and chaparral shall be provided with a 100-foot setback where interfacing with residences, and a minimum of 50 feet where interfacing with commercial and industrial development, active park uses, and schools.

2) Gnatcatcher- or cactus wren-occupied coastal sage scrub habitat shall be provided with a setback no less than 100 feet determined in consideration of topography or other factors through additional study at the SPA level. ["Occupied habitat" includes the area encompassed by a bird's foraging territory.]

3) Perennial (native) grassland shall be provided with a setback of a minimum of 25 feet and a maximum of 50 feet between the habitat and proposed development (e.g., residential, commercial, pipeline, roadway, etc.).

4) Vernal pools setbacks must include the watershed and a minimum of an additional 100 feet, depending upon adjacent land use.




Phase 1 Otay Ranch RMP

**Edge Areas Requiring Future Detailed Review**

FIGURE 19

5) Mule fat scrub should be provided with a setback that is a minimum of 50 feet and a maximum of 100 feet wide, depending upon the quality of the habitat and its function within the matrix of the surrounding vegetation (e.g., corridor, foraging habitat, etc.), and the specific type of adjacent development.

6) Riparian woodlands should be provided with a setback of a minimum of 100 feet and a maximum of 200 feet between the woodland and development (commercial and residential).

7) Oak woodlands should be provided with a setback of a minimum of 50 feet and a maximum of 100 feet between the woodland and development (commercial and residential).

8) Southern interior cypress forest should be provided with a setback of a minimum of 50 feet and a maximum of 100 between the forest and residential or commercial development.

# CHAPTER 4

# IMPLEMENTATION GUIDELINES

# 4.0 IMPLEMENTATION GUIDELINES

## 4.1 Introduction

This Phase 1 RMP document establishes the framework for the creation of a Preserve and provides objectives and standards to guide subsequent RMP implementation. Implementation of the RMP will begin with submittal of the first SPA/Specific Plan and will continue through the build-out of Otay Ranch. While the objectives and policies presented in Chapter 3 provide specific standards and requirements for resource protection, permitted uses within the Preserve, and regulatory compliance, this Chapter provides details on how the conveyance of parcels into the Preserve and restoration activities can be implemented in a manner that meets those standards and fulfills the goal of the RMP. Included in this Chapter are guidelines for (1) conveyance of parcels into the Preserve, (2) habitat restoration, (3) pre-impact mitigation and mitigation ratios, (4) Preserve Owner/Manager selection and duties, and (5) subsequent RMP stages.

## 4.2 Preserve Conveyance

The Otay Ranch General Plan Amendment (GPA) and GDP/Subregional Plan processed concurrently with this Phase 1 RMP establish the land use designation for the Preserve and formally identify the Preserve as open space/impact sensitive on General Plan and GDP/Subregional Plan land use maps. Policy 8.1 of this Phase 1 RMP requires that existing conditions be maintained within areas designated as part of the Preserve prior to conveyance and that existing conditions not be allowed to negatively affect sensitive resources within the designated Preserve.

With the first SPA/Specific Plan proposing development within Otay Ranch, a conveyance schedule shall be established for the Preserve. Actual conveyance of the first parcel to the Preserve, which shall involve ownership transfer in fee title to the identified Preserve Owner/Manager, shall occur with recordation of the first final map proposing development

within Otay Ranch. This section, along with Policy 5.6 of this Phase 1 RMP, outlines the standards and criteria that will guide design of the conveyance schedule to be included in the Phase 2 RMP.

1) First priority shall be given to conveyance of highest quality resources (such resources may include vernal pools on Otay Mesa, Diegan coastal sage scrub habitat in the Salt Creek area, gnatcatcher population areas in the western San Ysidro and central Proctor Valley areas, or potential wetlands restoration areas in the Otay River Valley [depending upon the status of regional park plans and wetlands restoration plans at the time Otay River Valley parcels are conveyed]);

2) First priority shall be given to conveyance of most vulnerable areas (i.e. those most subject to potential or ongoing disturbance);

3) Conveyance shall occur in an orderly manner beginning with an identified "keystone" parcel (eg. vernal pool areas, Salt Creek area, Otay River Valley, central Proctor Valley, western San Ysidro) and proceed to the next logical block of land;

4) Areas with restoration potential shall be conveyed early in order to begin long-term research and restoration activities early in the process (eg. Otay River Valley, vernal pool areas, potential Diegan coastal sage scrub/maritime succulent scrub restoration areas north and south of the Otay River Valley);

5) Cumulative acreage conveyed shall be greater than or equal to the cumulative acreage of proposed SPA/Specific Plan development;

6) General guidelines regarding in-kind mitigation and no net loss of wetlands shall be considered in the development of the conveyance schedule, particularly in the context of

applicable State and Federal regulations (it is understood that in-kind mitigation may not always be the preferable approach to achieve the goal of establishing a functioning, manageable Preserve);

7) Applicable State and Federal regulations regarding protection of sensitive habitat and species shall be followed in the development of the conveyance schedule;

8) The Preserve Owner(s)/Manager(s) shall participate in preparation of the conveyance schedule.

It should be noted that there are internal conflicts between some of the criteria listed above. This is to be expected given the various factors involved in the conveyance process and highlights the need to discuss conveyance issues with the Preserve Owner/Manager and relevant jurisdictions during development of the Phase 2 RMP. The goal of the conveyance schedule to be developed during the Phase 2 RMP shall be to prepare a schedule that applies the criteria listed above in a balanced, credible and defensible manner in accordance with the overriding goal established for the RMP which is to maintain long-term biological diversity and assure the survival and recovery of native species and habitats within the Preserve. Protection and enhancement of biological resources shall be the primary guiding principle behind development of the conveyance schedule. Along with the conveyance schedule prepared as part of the Phase 2 RMP, findings shall be prepared describing the ways in which the conveyance schedule implements the goal of the RMP and the ways in which the 8 criteria listed above have been applied in the development of the conveyance schedule.

Assurance that areas designated as part of the Preserve will be conveyed to the Preserve regardless of whether or not Preserve lands change ownership over the implementation period of Otay Ranch will be provided by:

a) The application of the land use designation (24) Impact Sensitive and S-80 zoning.

b) The addition of language to the General Development Plan/Subregional Plan (GDP/SRP) and new Memorandum of Understanding (MOU) that states the City and County will jointly prepare and approve the conveyance schedule of parcels into the Preserve.

c) The conveyance schedule shall be an EIR mitigation measure, and an element of the City's and the County's Mitigation Monitoring and Reporting Program (MMRP) which states that the County is a third party beneficiary. The MOU shall require conveyance in accord with the conveyance schedule prepared as part of the Phase 2 RMP at the time of the first SPA approvals.

d) Language in the GDP/SRP that states that the Preserve lands are to be conveyed into the Preserve and become the property of the Owner/Manager and are not available for development.

e) Policy 5.7 and 5.8 in the RMP and pages 367 and 368 of the GDP/SRP which discuss the intent to convey to the Preserve, Owner/Manager lands identified by the S-80 zoning.

f) Lands to be conveyed to the Preserve Owner/Manager shall be labelled conceptual Preserve in the Phase I RMP (see Chapter 5).

## 4.3 Restoration

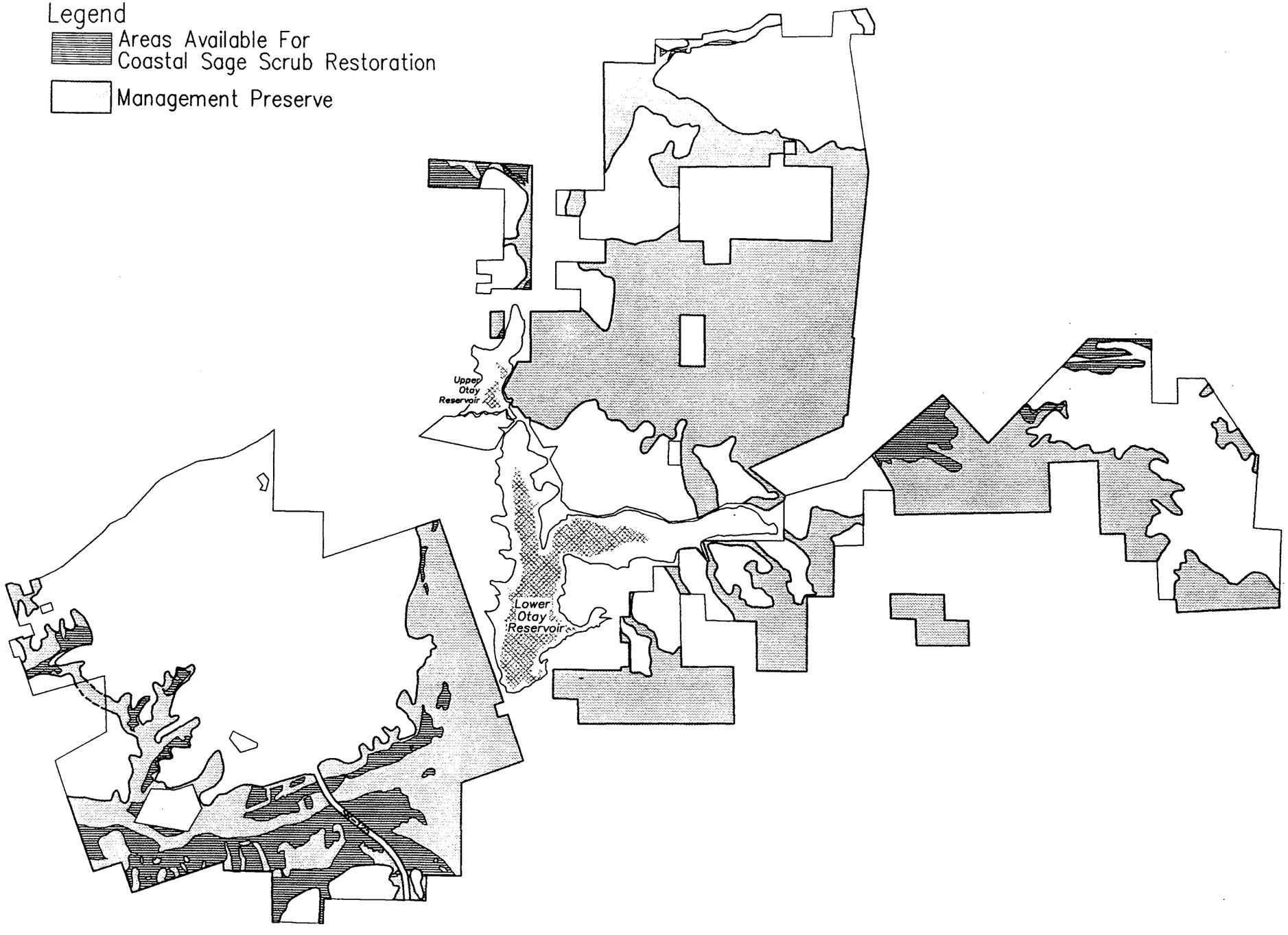
Habitat restoration within the Preserve shall be conducted in conformance with Policies 3.1-3.6. The costs for restoration activities that are required as mitigation for impacts associated with development of Otay Ranch shall be borne by individual developers within Otay Ranch. Restoration plans and activities undertaken as mitigation measures are subject to approval of the

appropriate jurisdiction with the concurrence of the Preserve Owner/Manager. Restoration and enhancement is proposed for four sensitive habitat types: coastal sage scrub (including maritime succulent sage scrub), wetlands, native grasslands, and vernal pools. Conceptual revegetation/restoration plans are presented in the Appendix for each of these habitat types. The conceptual restoration plans included in the Appendix identify target restoration acreages and performance standards and monitoring requirements for each habitat type. Potential restoration locations are illustrated in Section 4.3.1. Site-specific restoration plans will be prepared for individual restoration projects within the Preserve in conjunction with each SPA as specific SPA impacts are identified. Calculations of areas to be preserved, areas to be disturbed, and areas available for restoration in this section are based on the Approved Plan boundary described in Chapter 5 of this document.

### 4.3.1 Locations of Potential Restoration Areas

Within the Preserve, restoration activities will be conducted for the enhancement and creation of four sensitive habitat types: coastal sage scrub (including maritime succulent scrub), wetland/riparian, native grassland, and vernal pool. This section identifies the locations available for restoration of each habitat type (Figures 20-23).

**Coastal sage scrub**. Enhancement of coastal sage scrub habitat will take place in areas that currently support coastal sage scrub/non-native grassland (primarily in the San Ysidro block), non-native grassland/coastal sage scrub (nearly evenly split between the Otay River Valley and San Ysidro parcels), and disturbed coastal sage scrub (Proctor Valley) (Figure 20). Creation of coastal sage scrub habitat will take place in areas that currently support non-native grassland (primarily in the Otay River Valley) and agriculture (all in the Otay River Valley).




Phase 1 Otay Ranch RMP

**Areas Available for CSS Restoration**

FIGURE 20

Legend

Areas Available For Wetland Restoration

Management Preserve

Upper Otay Reservoir

Lower Otay Reservoir

1" = 5500'

Phase 1 Otay Ranch RMP

**Areas Available for Wetland Restoration**

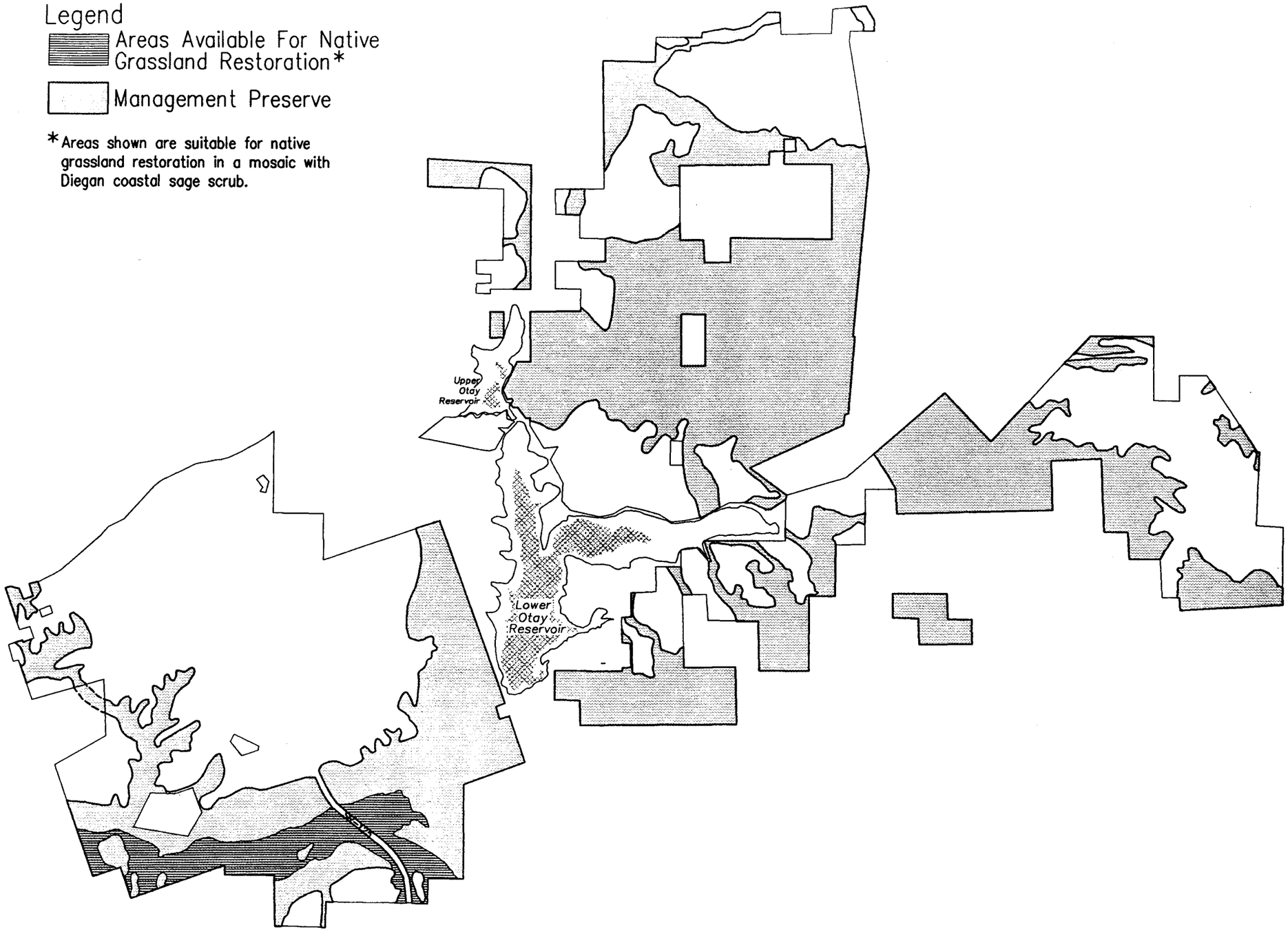
FIGURE 21

Legend

Areas Available For Native Grassland Restoration*

Management Preserve

*Areas shown are suitable for native grassland restoration in a mosaic with Diegan coastal sage scrub.




1" = 5500'

Phase 1 Otay Ranch RMP

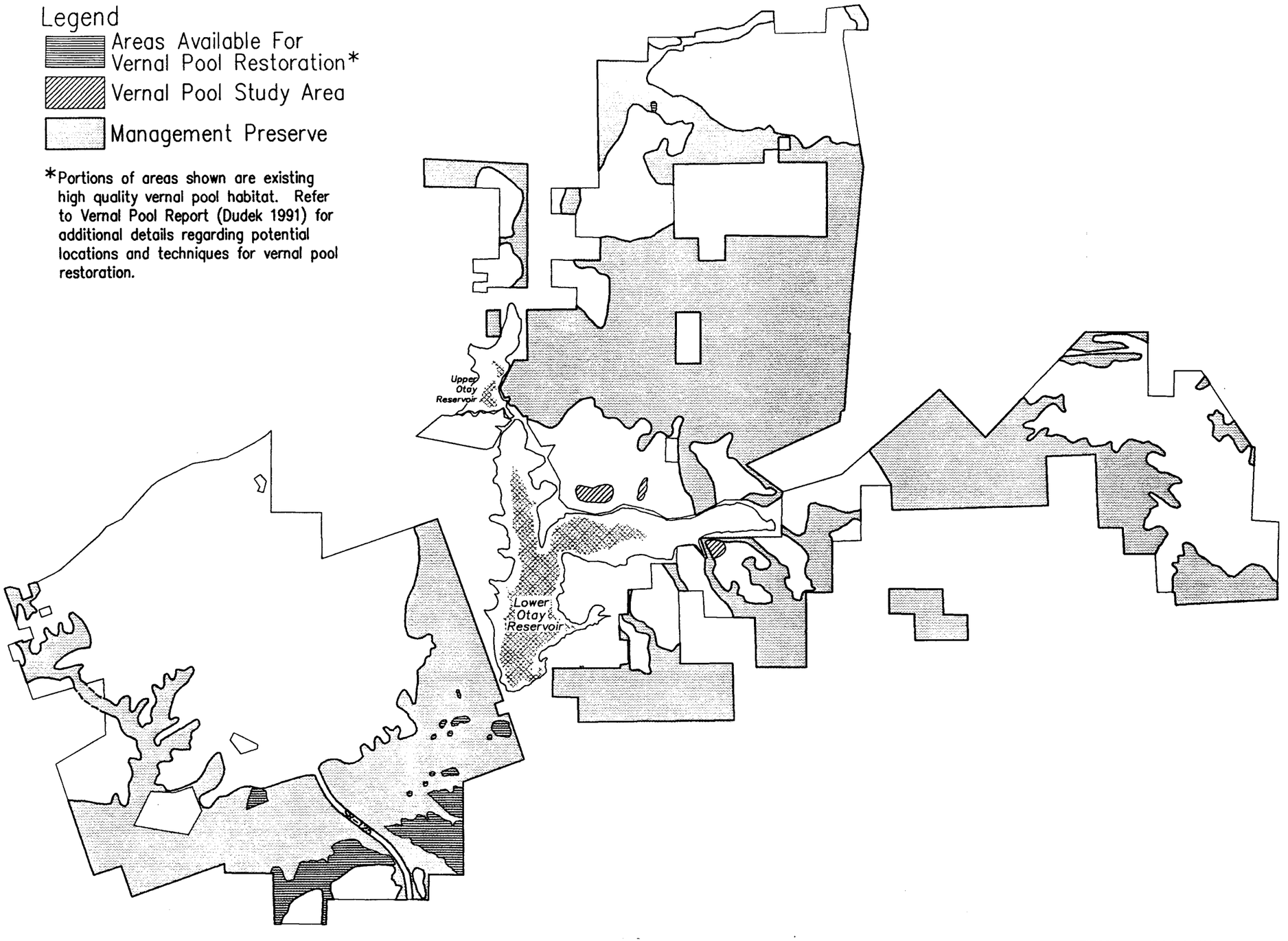
**Areas Available for Native Grassland Restoration**

FIGURE 22

Legend

- Areas Available For Vernal Pool Restoration*
- Vernal Pool Study Area
- Management Preserve

*Portions of areas shown are existing high quality vernal pool habitat. Refer to Vernal Pool Report (Dudek 1991) for additional details regarding potential locations and techniques for vernal pool restoration.




1" = 5500'

Phase 1 Otay Ranch RMP

**Areas Available for Vernal Pool Restoration**

FIGURE 23

Approximately 8 acres of non-native grassland along the northern edge of the Otay River Valley will be used for maritime succulent scrub creation. The latter areas are immediately adjacent to existing maritime succulent scrub habitat.

**Wetland/Riparian.** Restoration of wetland/riparian habitat will be concentrated in the Otay River Valley (Figure 21). These activities will take place in areas that currently support disturbed or degraded wetland habitats, including tamarisk/mulefat scrub, mulefat scrub, tamarisk scrub, and baccharis scrub. Approximately 5 acres of disturbed alkali meadow habitat are available in the Proctor Valley parcel for enhancement of this habitat type.

**Native Grassland.** Restoration of native grassland will be concentrated in the Otay River Valley (Figure 22). Areas available for native grassland creation include non-native grassland in the Otay River Valley. Disturbed valley needlegrass grassland in the Proctor Valley parcel represent potential areas for native grassland enhancement particularly in the vernal pool study area (Figure 23).

**Vernal Pools.** Restoration of vernal pools will be concentrated in the Otay River Valley parcel (Figure 23). In particular, the following pool complexes include considerable area with restoration potential: J-23, J24, J25, J-29, J-30, J-32+, K-1, K-2, K15+, and R-3+. Although the number of acres of available habitat does not provide a reliable indication of the amount of pool surface area that can be enhanced, 290 acres are available for potential enhancement.

## 4.4 Restoration Guidelines

Conceptual plans and locations for restoration activities within the Preserve are presented in Section 4.3 of this document. This section presents the commitment, as part of this Phase 1 RMP, to restoration efforts within the Preserve.

In general, restoration activities will be accomplished as mitigation for impacts associated with development within Otay Ranch. The costs for restoration activities that are required as mitigation for impacts associated with development shall be borne by individual developers within Otay Ranch. Other restoration activities may also take place within the Preserve as part of ongoing research programs. The costs for such restoration activities shall be borne by the appropriate entity.

Table 2 summarizes the acreages of sensitive habitats that shall be restored within the Preserve to offset the impacts of the GDP/SRP. The anticipated locations of restoration activities within the Preserve are illustrated on Figures 20-23 in Section 4.3 of this document. As noted in Section 4.3 (and shown in Tables 4B and 10Bof the Appendix), additional acreage is anticipated to be available within the Preserve for wetlands and vernal pool restoration. These areas may be suitable for the establishment of mitigation banks, approved as such by local jurisdictions and resource agencies. Opportunities and plans for mitigation banks shall be developed in conjunction with preparation of wetlands enhancement plans for the Otay River Valley and the vernal pool preservation plan. All revenue generated by wetlands mitigation banks shall be given to the Preserve Owner(s)/Manager(s) to fund Preserve activities.

**Table 2**
**Restoration Acreages Within The Preserve**

| Habitat Type | GDP/SRP Impacts[1] | Area to be Restored (Acres) |
|---|---|---|
| Coastal sage scrub | 3,338 | 1,300[1] |
| Maritime succulent scrub | 57 | 57 |
| Native grassland | 198 | 199 |
| Wetlands | 57 | 171[2] |
| Vernal pools | 14[4] | 42[3] |

**Notes:**

1 The applicant is committed to providing 1,300 acres of coastal sage scrub restoration to offset GDP/SRP impacts. Based on Preserve acreages associated with the Phase 2 mitigated Progress Plan, it is anticipated that all 1,300 acres of coastal sage scrub restoration will occur within the Preserve.

[2] Assumes overall 3:1 replacement of wetlands to be disturbed. Ultimate ratios may vary depending upon resource agency requirements determined on a case by case basis for wetland impacts associated with individual developments.

[3] The actual amount of vernal pools surface area anticipated to be disturbed is much less than 14 acres. Actual definition of impacts and restoration requirements will need to be determined in consultation with the resource agencies in conjunction with preparation of the Phase 2 RMP.

---

As specific impacts are identified in conjunction with development of Otay Ranch, specific mitigation/restoration plans will need to be prepared for individual developments. The exact acreages of habitat types to be restored will depend upon the physical characteristics of the restoration areas under consideration. Final restoration plans will take such physical characteristics under consideration to enhance the potential for success of restoration efforts. Depending upon the specific identified impact and the specific character of the development, mitigation/restoration activities may take place within the Preserve or within the proposed development area. In no case shall the acreages shown for restoration within the Preserve in the table above be decreased by restoration activities outside the Preserve. (See footnote 1 in Table 2 regarding coastal sage scrub restoration within and outside the Preserve.)

An important feature of the Otay Ranch RMP is the process of pre-impact mitigation whereby degraded coastal sage scrub, maritime succulent scrub, valley needlegrass grassland, wetlands and vernal pools will be restored and enhanced, and sensitive habitat will be created within the Preserve. In many cases, this will occur prior to disturbance of sensitive habitats within the portions of Otay Ranch proposed for development. Pre-impact mitigation provides the opportunity to initiate restoration efforts prior to disturbance and ensures the success of restoration efforts prior to receiving mitigation credit.

Conceptual restoration plans for coastal sage scrub, riparian, native grassland and vernal pool habitats are presented in the Appendix to this document. In addition to conformance with

those conceptual plans, future restoration activities shall also adhere to the following guidelines:

-- Coastal sage scrub restoration activities will take place primarily in the Otay River Valley, Salt Creek Canyon, Wolf Canyon and north of Lower Otay Lake in the vernal pool/grassland study area (the K-6 area).

-- Coastal sage scrub restoration activities shall commence prior to or concurrent with approval of the first SPA/Specific Plan within Otay Ranch and shall have achieved success, based on performance standards presented below and in future detailed restoration plans, prior to or concurrent with approval for any development resulting in significant impacts to coastal sage scrub habitat occupied by California gnatcatchers and/or cactus wrens within Otay Ranch.

The success of a specific coastal sage scrub restoration effort will be measured by its ability to replace the habitat values lost, and directly by its ability to support native plant and wildlife species typical of coastal sage scrub. It should be noted that there are several different sub-types of coastal sage scrub characterized by different dominant species, and each may have particular habitat or restoration requirements. The following are preliminary success criteria that may be revised based on empirical field data:

The shrub layer within each revegetated patch will consist of at least four site-typical native shrub species found on Table 2 of the Appendix , and the herb layer will consist of at least 4 native grass or herb species.

The percent cover composition of the shrub and herb layers will be determined by quantitative analysis of a target patch of vegetation. The target patch may be a different sub-type of coastal sage scrub than that being disturbed; the

availability of the mitigation site will determine which sub-type is most appropriate for restoration. Factors that reflect current habitat quality of the to-be-disturbed site will be measured, including total species number, number and prevalence of exotic species, and shrub and herb density. Vegetation success standards for the restoration area will incorporate the presence of at least 60% of the shrub species determined to occur in the preferred habitat type within the target patch of vegetation.

Wildlife use will be measured using birds. In a patch greater than 25 acres, there will be use by at least 80% of the species found to be resident in the baseline study or at least five scrub-requiring bird species from the following list of resident species, whichever is greater.

Bewick's wren
Cactus wren
California gnatcatcher
California quail
California thrasher
California towhee
Rufous-crowned sparrow
Rufous-sided towhee
Sage sparrow
Scrub jay
Wrentit

-- It is recognized that the overriding goal of all restoration plans is to contribute positively to the overall Preserve design for Otay Ranch and the South County

Subregion. Future detailed restoration plans prepared in conjunction with SPA plans, as required, shall demonstrate consistency with this overriding goal.

-- The success of ongoing restoration activities for all habitat types shall be evaluated by the appropriate jurisdiction in conjunction with the ongoing review and approval process for individual developments within Otay Ranch. If it is determined that restoration activities are not succeeding, other options shall be considered to provide mitigation for impacts associated with development of Otay Ranch. Such options may include project redesign to avoid anticipated impacts or offsite mitigation.

## 4.5 Preserve Owner(s)/Manager(s)

The Preserve Owner/Manager will oversee the day-to-day and long-range activities within the Management Preserve. He/she will take an active role in the maintenance of biological resources, the development of educational programs, and the implementation of RMP policies related to management of the Preserve. The Owner/Manager also will be involved in the decision-making processes for all activities and amendments that potentially effect the integrity of the Preserve. The qualifications for the Preserve Owner/Manager are outlined in Policy 5.1. Specific responsibilities of the Preserve Owner/Manager shall include the following:

-- Maintenance of existing high quality resources through the prevention of further disturbance, including controlling access to the Preserve, prohibiting off-road traffic, enforcing "no trespassing" rules, and curtailing activities that degrade resources, such as grazing, shooting, and illegal dumping.

-- Monitoring of resources to identify changes in the quality and quantity of sensitive resources and habitats.

-- Implementation and monitoring of restoration activities, as appropriate (it is understood that some restoration activities will be carried out by individual Otay Ranch developers in coordination with the Preserve Owner/Manager).

-- Implementation of maintenance activities including removal of trash, litter, and other debris, maintenance of trail systems, removal and control of exotic plant species (weeds), and control of cowbirds through trapping efforts.

-- Development of educational facilities and interpretive programs.

-- Implementation and/or accommodation of research programs.

-- Coordination with local jurisdictions, resource agencies, adjacent ownerships, and OVRP.

-- Enforcement activities.

-- Review of RMP Amendments, Preserve boundary adjustments, infrastructure plans, plans for active recreational uses with the Preserve, plans for land uses adjacent to the Preserve and other activities/studies as identified in the RMP.

The selection process for the Preserve Owner(s)/Manager(s) shall be initiated through a Request for Qualifications (RFQ) or similar process. The landowner will encourage the application (submission of qualifications) of select potential Owner(s)/Manager(s) that possess all of the qualifications. The selection process will involve recruitment and interviews, and proceed in an iterative manner. Review and selection of the Preserve Manager shall be conducted jointly by the landowner, the City of Chula Vista and the County of San Diego. This process also will

allow the potential Owner(s)/Manager(s) to become familiar with the future Preserve area, the potential funding mechanisms, and the goal, objectives, and policies of the RMP.

## 4.6 Subsequent RMP Stages

As summarized in Table 1 in Chapter 1 of this document, this Phase 1 RMP is the first step in achieving the goal of the RMP to establish an open space system that will become a permanent Preserve dedicated to the protection and enhancement of resources, maintenance of biological diversity and assurance of the survival and recovery of native species and habitats within the Preserve. With the first SPA/Specific Plan within Otay Ranch, the Phase 2 RMP must be prepared and approved. RMP implementation will be ongoing during the buildout of Otay Ranch. Table 3 provides a summary of the activities/studies that have been completed as part of this Phase 1 RMP, that must be completed in conjunction with the Phase 2 RMP and that will occur as ongoing RMP implementing actions.

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Implementation |
| **Biological Resources** | Identify key resource areas . | 1.1 | ✓ | | |
| | Complete biological studies. | 1.2 | | ✓ | |
| | Include key biological resource areas in Preserve. | 2.1 | ✓ | | |
| | Preserve coastal sage scrub. | 2.2 | ✓ | ✓ | ✓ |
| | Preserve native grassland. | 2.3 | ✓ | ✓ | ✓ |
| | Preserve southern interior cypress forest, coast live oak, oak riparian forest, riparian woodland, sycamore alluvial woodland. | 2.4 | ✓ | ✓ | ✓ |
| | Maintain viable populations of California gnatcatcher and cactus wren. | 2.5 | ✓ | ✓ | ✓ |
| | Preserve State and Federally listed species. | 2.6 | ✓ | ✓ | ✓ |
| | Preserve CNPS listed species. | 2.7 | ✓ | ✓ | ✓ |
| | Preserve USFWS Category 2 species. | 2.7 | ✓ | ✓ | ✓ |
| | Prepare Vernal Pool Preservation/Management Plan. | 2.9 | | ✓ | |
| | Preserve and enhance wetlands. | 2.10 | ✓ | ✓ | ✓ |
| | Preserve raptor habitat. | 2.11 | ✓ | ✓ | ✓ |
| | Identify potential restoration areas. | 3.1 | ✓ | | |

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Implementation |
| Biological Resources (Cont'd.) | Prepare conceptual coastal sage scrub restoration plan. | 3.2 | ✓ | | |
| | Prepare coastal sage scrub restoration implementation plans. | 3.2 | | | ✓ |
| | Prepare conceptual riparian restoration plan | 3.3 | ✓ | | |
| | Prepare riparian restoration implementation plans | 3.3 | | | ✓ |
| | Prepare conceptual native grassland restoration plans | 3.4 | ✓ | | |
| | Prepare native grassland restoration implementation plans | 3.4 | | | ✓ |
| | Develop programs for creation of habitat for species formerly present on Otay Ranch. | 3.6 | | | ✓ |
| | Incorporate habitat linkages and wildlife corridors in the Preserve. | 4.1 | ✓ | ✓ | ✓ |
| | Assure consistency with NCCP data collection requirements. | 4.2 | ✓ | ✓ | ✓ |
| **Cultural Resources** | Complete systematic survey for cultural resources. | 1.3 | | ✓ | |
| | Preserve significant cultural resources. | 2.12 | ✓ | ✓ | ✓ |

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Implementation |
| **Prominent Landforms/ Steep Slopes** | Identify major landforms and incorporate in the Preserve. | 1.6 | ✓ | | |
| **Floodplains** | Identify and map floodplains. | 1.5 | ✓ | | |
| | Design drainage improvements compatible with resource protection. | 2.13 | | ✓ | ✓ |
| **Paleonto-logical Resources** | Recover fossils during grading. | 1.4 | | | ✓ |
| **Agriculture** | Identify and map agricultural lands. | 1.8 | ✓ | | |
| | Provide demonstration agriculture within the Preserve. | 2.14 | | ✓ | ✓ |
| **Recreation** | Identify recreation opportunities. | 1.7 | ✓ | | |
| | Limit active recreation within the Preserve to 400 acres. | 6.2 | ✓ | ✓ | ✓ |
| | Provide hiking and walking trails in the Preserve. | 6.3 | | | ✓ |
| | Provide wilderness camping and picnicking in non-sensitive areas. | 6.4 | | | ✓ |
| **Management** | Identify required qualifications of Preserve Owner/Manager. | 5.1 | ✓ | | |
| | Select Preserve Owner/Manager. | 5.1 | | ✓ | |

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Imple-mentation |
| Management (Cont'd.) | Define responsibilities of Preserve Owner/Manager | 5.2 | ✓ | | |
| | Develop management strategies | 5.3 | ✓ | ✓ | ✓ |
| | Establish overall monitoring program | 5.4 | | ✓ | |
| | Carry out monitoring | 5.5 | | | ✓ |
| | Develop plan for conveyance of parcels to the Preserve | 5.6 | ✓ | | |
| | Permit changes in order of conveyance | 5.7 | | ✓ | ✓ |
| | Require Preserve conveyance on a SPA-by-SPA basis regardless of changes in ownership | 5.8, 5.9 | | ✓ | ✓ |
| | Identify RMP costs and funding strategies | 5.12 | | ✓ | |
| | Provide educational and interpretive programs | 6.1<br>5.10 | | | ✓ |
| **Use Restrictions/ Regulatory Framework** | Restrict motorized vehicular access | 6.5 | | | ✓ |
| | Identify restricted areas within the Preserve | 6.6 | | | ✓ |
| | Develop general infrastructure plan including standards and criteria to guide infrastructure siting and design. | 6.6 | | ✓ | |

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Implementation |
| Use Restrictions/ Regulatory Framework (Cont'd.) | Site and design infrastructure to minimize impacts to Preserve resources. | 6.7 | | | ✓ |
| | Permit fire roads only where absolutely necessary. | 6.8 | | | ✓ |
| | Permit ecologically necessary controlled burning. | 6.9 | | | ✓ |
| | Prepare "edge plans" for uses adjacent to Preserve. | 7.1, 7.2 | | ✓ | ✓ |
| | Maintain existing conditions prior to conveyance. | 8.1 | | ✓ | ✓ |
| | Manage ongoing mineral extraction through the permit process. | 8.2 | ✓ | ✓ | ✓ |
| | Develop Range Management Plan. | 8.4 | | ✓ | |
| | Carry out early consultation with resource agencies. | 9.1 | ✓ | | |
| | Encourage MOA(s) with resource agencies. | 9.2 | | ✓ | |
| | Complete wetlands delineations. | 9.3 | | ✓ | ✓ |
| | Identify areas subject to CDFG Section 1600 Streambed Alteration Agreements. | 9.4 | | ✓ | ✓ |
| | Complete CEQA review of individual Otay Ranch developments. | 9.5 | | ✓ | ✓ |

**TABLE 3. SUMMARY OF RMP ACTIVITIES/STUDIES ASSOCIATED WITH EACH STAGE OF THE RMP**

| Resource/ Management Category | RMP Activity/ Study/ Requirement | RMP Policy Reference | RMP Stage | | |
|---|---|---|---|---|---|
| | | | Phase 1 RMP | Phase 2 RMP | RMP Imple-mentation |
| Use Restrictions/ Regulatory Framework (Cont'd.) | Establish procedure for RMP amendments. | 9.6 | ✓ | | |
| | Amend RMP as appropriate. | 9.7 | | ✓ | ✓ |
| | Permit Preserve boundary modifications to enhance resource protection. | 9.8 | | ✓ | ✓ |

# CHAPTER 5
# THE PRESERVE

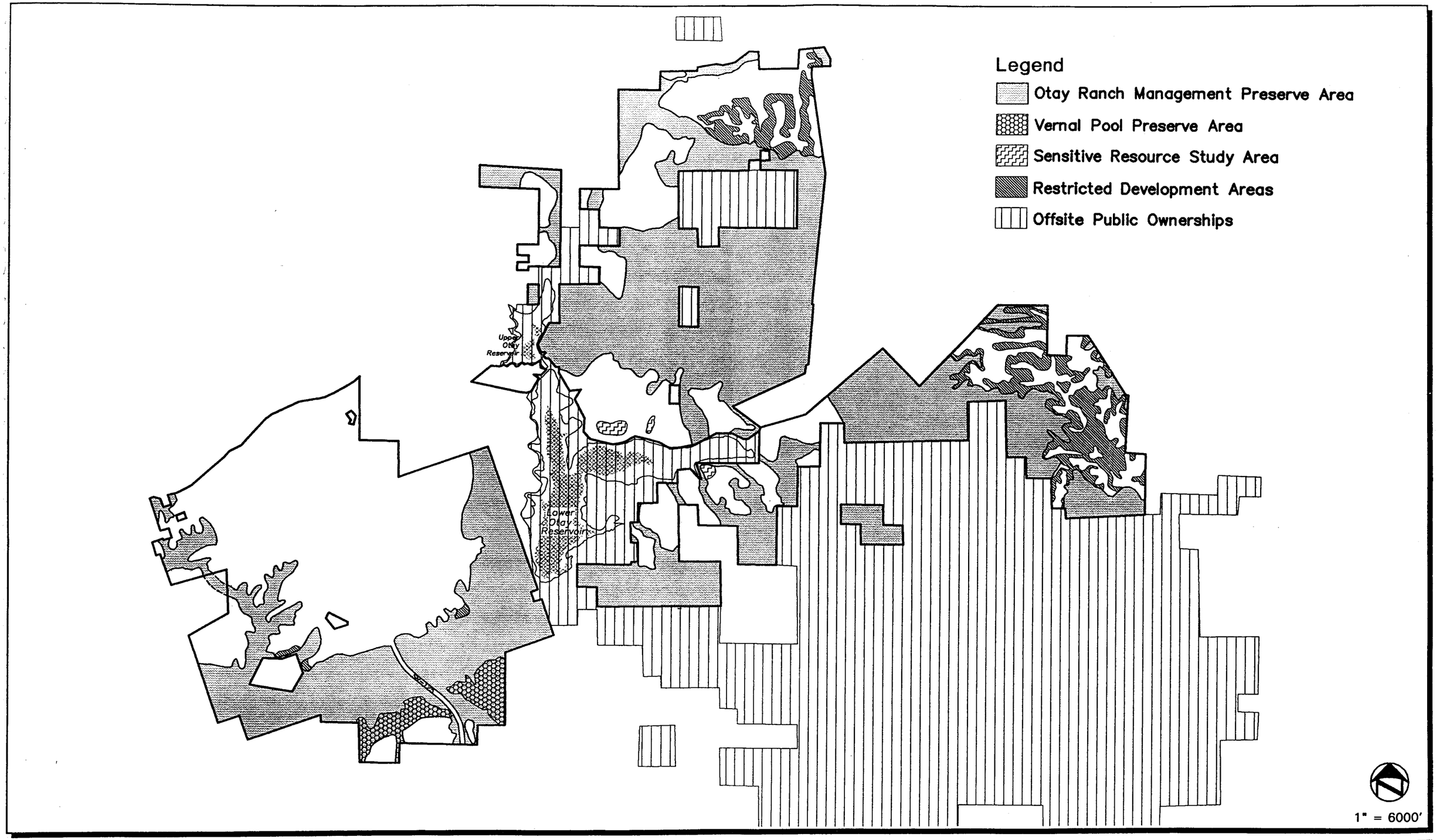
# 5.0 THE PRESERVE

Although the objectives of the Preserve are easily defined, achieving these objectives will be a difficult process and may require numerous iterations and re-evaluations as shortcomings and successes of the preserve design and management practices are realized. Policies presented in Chapter 3 of this document provide for future changes in the Preserve to achieve the goal of the RMP by responding to new information regarding the status and ecological requirements of biological components under the stewardship of the Preserve. Pursuant to RMP policy, the Preserve may be increased to accommodate additional land and sensitive resources, but its overall size cannot be decreased by any future boundary adjustments nor can any presently included sensitive resources be excluded at a future time.

## 5.1 General Description of the Preserve

The approved Plan Preserve boundary, illustrated in Figure 24, has been proposed that incorporates the key resource areas identified in Chapter 2 and fulfills the goal, objectives and policies of the RMP. In addition to the conceptual Preserve illustrated in Figure 24, additional restricted development areas totalling 1,166 acres have been identified as part of the planning process for the Otay Ranch GDP/Subregional Plan. These restricted development areas (Figures 25 and 26) are assumed to be preserved in open space, although not included in the Preserve. The approved Plan Preserve described in this chapter is 11,375 acres in size. Together with the 1,166 acres of restricted development areas, a total of 12,541 acres are anticipated to be preserved in open space on Otay Ranch.

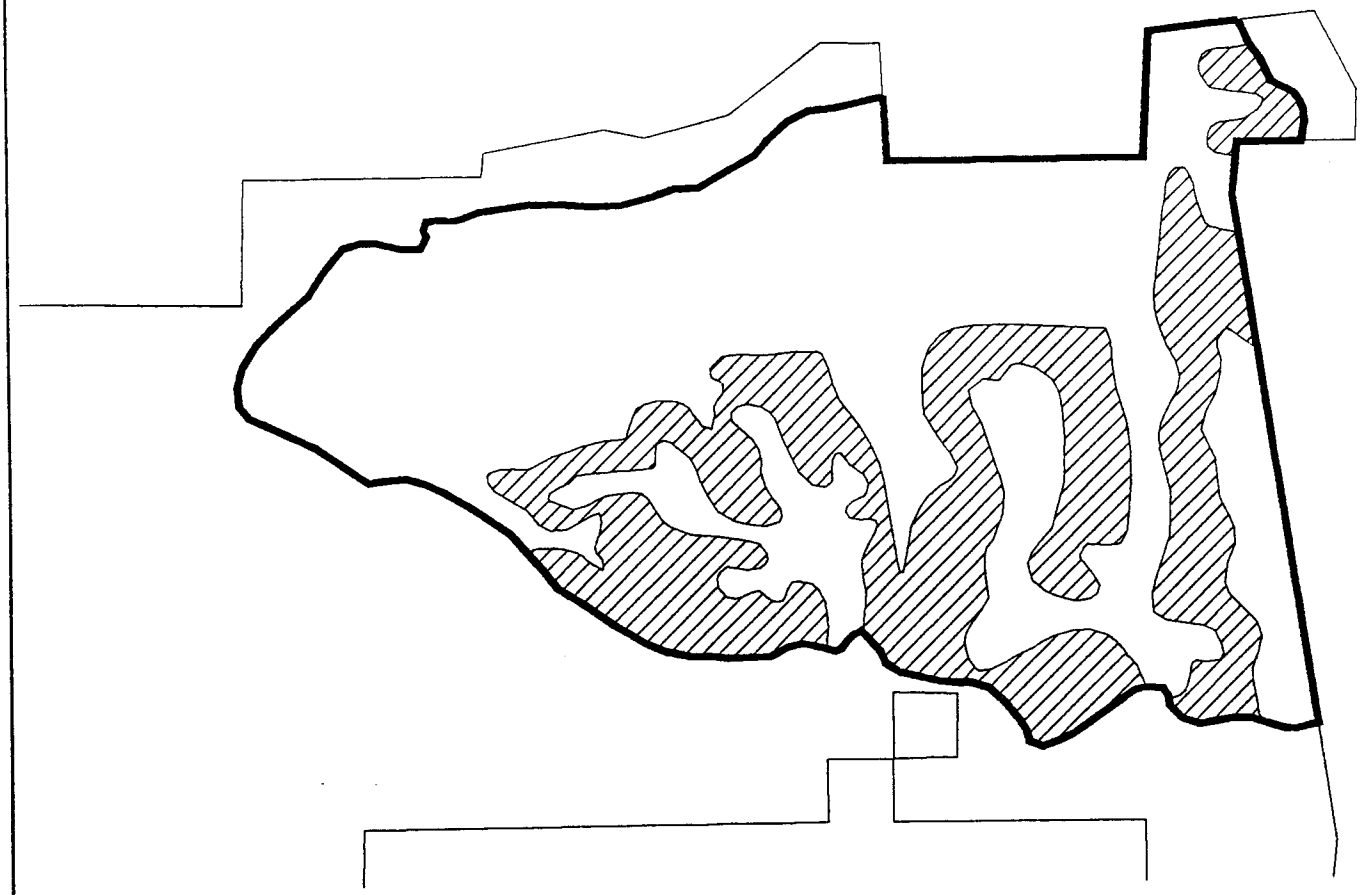
The following is a description of the conceptual Preserve, focusing on each of the three major blocks of Otay Ranch: the Otay River block, the Proctor Valley/Jamul Mountains block, and the San Ysidro Mountains block. Sensitive species, sensitive habitats, and important wildlife linkages encompassed by each block are described.

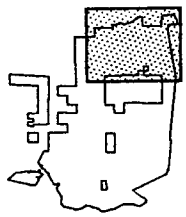



Phase 1 Otay Ranch RMP

**Approved Plan - Preserve Map**

FIGURE 24





INDEX MAP

Restricted Development Area (396 Acres)*

Development Area

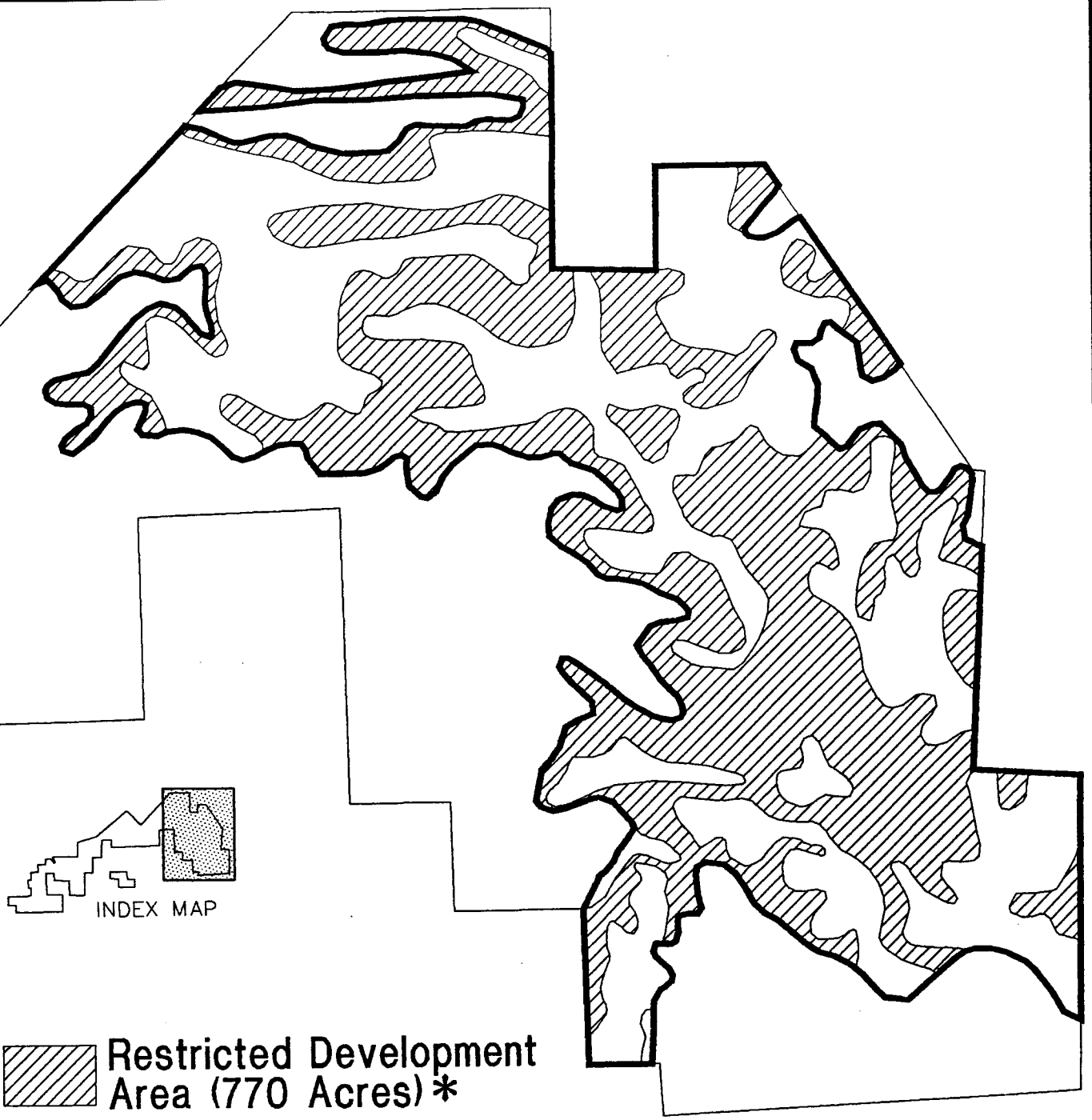
* Development within these areas is restricted pending future technical studies. The precise configuration of the restricted development areas may be revised based on future studies carried out at the SPA level that will further define the limits of the RDA. In no case shall the acreage to be retained in open space be less than 396 acres.

1" = 2000'

Phase 1 Otay Ranch RMP

# Proctor Valley - Restricted Development Areas

FIGURE 25




Restricted Development Area (770 Acres)*

Development Area

* Development within these areas is restricted pending future technical studies. The precise configuration of the restricted development areas may be revised based on future studies carried out at the SPA level that will further define the limits of the RDA. In no case shall the acreage to be retained in open space be less than 770 acres.

1" = 2000'

Phase 1 Otay Ranch RMP

# San Ysidro - Restricted Development Areas

FIGURE 26

**Otay Valley Block**

The Otay Valley Block includes 3,518 acres in the western portion of the Ranch, encompassing the Otay River Valley and the slopes to the north and south, Salt Creek, portions of Wolf Canyon and Poggi Canyon, and the mesa area south of the Otay River Valley. The Otay River Valley portion of this block includes a diversity of natural and disturbed habitats that function primarily as a large, continuous, topographically well defined region that includes riparian, coastal sage scrub, and grassland habitat. The region is likely to constitute a part of a larger regional corridor for wildlife movement between Lower Otay Lakes Reservoir/San Ysidro Mountains and natural habitat and open space to the west. Although much of the area within this portion of the preserve system is degraded, supporting non-native grassland and agriculture, the main drainage (Otay River Valley) supports several sensitive plant species, including San Diego marsh elder (*Iva hayesiana*) and spiny rush (*Juncus acutus* var. *sphaerocarpus*), and the adjacent uplands support San Diego sunflower (*Viguiera laciniata*), San Diego barrel cactus (*Ferocactus viridescens*), Coulter's matilija poppy (*Romneya coulteri*), snake cholla (*Opuntia parryi* var. *serpentina*), variegated dudleya (*Dudleya variegata*), Palmer's grappling-hook (*Harpagonella palmeri*), and ashy spike-moss (*Selaginella cinerascens*). The lower portion of the floodplain has high potential for riparian habitat creation/restoration. The Salt Creek portion of the Otay River Valley block includes coastal sage scrub and a majority of the maritime succulent scrub habitat on the Ranch, both of which support numerous sensitive plant species, including ashy spike-moss (*Selaginella cinerascens*), San Diego sunflower (*Viguiera laciniata*), Otay tarweed (*Hemizonia conjugens*), San Diego barrel cactus (*Ferocactus viridescens*), Palmer's grappling hook (*Harpagonella palmeri*), variegated dudleya (*Dudleya variegata*), and snake cholla (*Opuntia parryi* var. *serpentina*). This portion of the block also supports large numbers of the California gnatcatcher (*Polioptila californica californica*), cactus wren (*Campylorhyynchus branneicapillus sandiegensis*), sage sparrow (*Aimophila belli*), and populations of San Diego horned lizard (*Phrynosoma coronatum*) and orange-throated whiptail (*Cnemidoporus hyperythrus*). It also includes perches, nesting sites, and foraging territories for numerous

raptors. Also included in this block is the extensive vernal pool system on the mesa south of the Otay River Valley. The pools support a variety of sensitive plants, including San Diego button-celery (*Eryngium aristulatum* var. *parishii*), Otay Mesa mint (*Pogogyne nudiuscula*), and the only populations of San Diego navarettia (*Navarretia fossalis*) known from the Ranch. Between the pools, San Diego barrel cactus (*Ferocactus viridescens*), ashy spike-moss (*Selaginella cinerascens*), variegated dudleya (*Dudleya variegata*), and San Diego sunflower (*Viguiera laciniata*) occur. The mesa area also provides potential habitat for the federal Category 2 candidate species San Diego horned lizard (*Phrynosoma coronatum blainevillei*) and the Category 1 candidate quino checkerspot butterfly (*Euphydryas editha quino*). Historically, the only known Otay Ranch populations of California Orcutt's grass (*Orcuttia californica*) and dwarf pepper-grass (*Lepidium latipes*) occurred in this block. However, neither of these species has been detected in recent years.

**Proctor Valley/Jamul Mountains Block**

The Proctor Valley/Jamul Mountains includes 4,658 acres in the northern portion of the Ranch with valuable corridor linkages through Proctor Valley to the San Miguel Mountains, and from the Jamul Mountains to Otay Lakes and the San Ysidro Mountains. This 4,658-acre block surrounds a 745-acre parcel in the Jamul Mountains currently owned by the Bureau of Land Management (BLM). The addition of the BLM parcel increases the natural open space to 5,403 acres. The Jamul Mountains block encompasses extensive acreage of coastal sage scrub and some chaparral habitat supporting numerous sensitive plants, including Otay manzanita (*Arctostaphylos otayensis*), San Miguel savory (*Calamintha chandleri*), southern mountain-misery (*Chamaebatia australis*), dense reed grass (*Calamagrostis densa*), ashy spike-moss (*Selaginella cinerascens*), Engelmann oak (*Quercus engelmannii*), Munz's sage (*Salvia munzii*), narrow-leaved night-shade (*Solanum tenuilobatum*), Otay tarweed (*Hemizonia conjugens*), and large populations of San Diego golden-star (*Muilla clevelandii*). The southwestern portion of the block includes an isolated mesa supporting vernal pools (K6). Sensitive plant species found on

the mesa include variegated dudleya (*Dudleya variegata*), San Diego barrel cactus (*Ferocactus viridescens*), ashy spike-moss (*Selaginella cinerascens*), San Diego sunflower (*Viguiera laciniata*), and one of the few remaining San Diego County populations and the only known extant Otay Ranch populations of little mousetail (*Myosurus minimus* var. *apus*). The mesa also supports San Diego horned lizard (*Phrynosoma coronatum blainvillei*) and is an historical locality for quino checkerspot butterfly (*Euphydryas edita quino*). This block also includes an extensive population of San Diego thorn-mint (*Acanthomintha ilicifolia*) near Otay Lakes Road. The Jamul Mountains block preserves approximately 27 pairs of California gnatcatchers (*Polioptila californica californica*) and includes areas in which mountain lion sign and raptor perches have been observed (MBA 1989). In addition to habitat included within the Preserve, approximately 396 acres of coastal sage scrub situated in the "restricted development area" within the SPA that occupies the northern portion of Proctor Valley will be included in non-preserve open space.

**San Ysidro Mountains Block**

The San Ysidro Mountains includes 3,199 acres that serve not only as high quality habitat but link the existing BLM wildlife management area with Otay Lakes and the rest of the Preserve system. This block contributes the greatest diversity of habitats of any of the blocks, and hence, represents a major contribution to the biodiversity of the preserve system. Included in the San Ysidro Mountains block are coastal sage scrub, southern mixed chaparral, sycamore alluvial woodland, coastal and valley freshwater marsh, and southern interior cypress forest. One of the most significant features of this block is the 165 acres of southern interior cypress forest dominated by the endemic Tecate cypress (*Cupressus forbesii*). This unique habitat supports a wide variety of sensitive plant and wildlife species including the federal Category 2 candidate butterfly Thorne's hairstreak (*Mitoura thornei*). Twenty-two sensitive plant species have been documented from this block, including ten federal Category 2 candidates - San Diego barrel cactus (*Ferocactus viridescens*), San Diego goldenstar (*Muilla clevelandii*), variegated dudleya (*Dudleya variegata*), Otay manzanita (*Arctostaphylos otayensis*), Orcutt's brodiaea (*Brodiaea*

*orcuttii*), Dunn's mariposa lily (*Calochortus dunnii*), Mexican flannelbush (*Fremontodendron mexicanum*), Gander's pitcher-sage (*Lepechinia ganderi*), willowy monardella (*Monardella linoides* ssp. *viminea*), and narrow-leaved nightshade (*Solanum tenuilobatum*). In addition, several sensitive wildlife species, including the California gnatcatcher (*Polioptila californica californica*) and San Diego horned lizard (*Phrynosoma coronatum blainvillei*), will be protected within the San Ysidro Mountains block. In addition to habitat included within the Preserve, approximately 770 acres of coastal sage scrub situated in the "restricted development area" within the SPA that occupies the eastern portion of the San Ysidro Mountains will be included in non-preserve open space.

## 5.2 Biological Resources Within The Preserve

The diverse assemblage of biological resources present on Otay Ranch is discussed in detail in the biological reports (MBA 1989, 1990, 1991; RECON 1990, 1991; DUDEK 1991) and the draft EIR. Habitats included within the study area and the Preserve are listed in Table 4, along with the percentage of each habitat type proposed for inclusion and permanent protection within the Preserve. The Preserve includes portions of all of the native habitat types currently known from Otay Ranch. In addition, as shown in Table 4, nearly all of the existing acreage for the following habitats mapped by MBA and RECON on Otay Ranch will be preserved within the Management Preserve: southern interior cypress forest, coast live oak woodland, coast live oak riparian forest, sycamore alluvial woodland, coastal and valley freshwater marsh, baccharis scrub, eucalyptus woodland, and perennial aquatic habitats. Nearly all (98 percent) of the acreage of three degraded wetland habitat types - baccharis scrub, baccharis floodplain scrub, and tamarisk scrub - also will be included within the preserve in the Otay River corridor. The latter are likely to provide opportunities for wetland habitat enhancement.

Additional limited wetland and aquatic habitat types may be present within Otay Ranch, but were not mapped in 1989. These areas will be the subject of future wetland delineation studies for

each Specific Plan Area. Wetland impacts outside the preserve will be mitigated by habitat restoration and creation within the preserve; RMP policies require that no net loss of quantity or quality of wetlands shall occur within the 22,899-acre study area. Degraded wetland habitats, such as those in the Otay River Valley, will be enhanced and restored to increase primary productivity and wildlife habitat value. Such efforts may include, but are not limited to, removal of invasive species such as tamarisk, tree tobacco, and giant cane; revegetation with native riparian species such as willow, cottonwood, and sycamore; and channel modification.

**TABLE 4**
**HABITATS WITHIN THE APPROVED PLAN PRESERVE**

| Habitat Type | Existing Habitat Otay Ranch Ownership (Acres) | Habitat Within Management Preserve (Acres) | % of Total Habitat Within Preserve |
|---|---|---|---|
| **Sage Scrub Communities** | | | |
| Diegan coastal sage scrub | 10,364 | 6,413[1] | 62% |
| Disturbed Diegan coastal sage scrub | 761 | 208 | 27% |
| Maritime succulent scrub | 285 | 228 | 80% |
| **Subtotal** | **11,410** | **6,849** | **60%** |
| **Chaparral Communities** | | | |
| Chamise chaparral | 1,441 | 744 | 52% |
| Southern mixed chaparral | 1,226 | 1,089 | 88% |
| **Subtotal** | **2,667** | **1,833** | **69%** |
| **Floodplain Scrub** | | | |
| Baccharis scrub | 19 | 19 | 100% |
| Baccharis floodplain scrub | 113 | 113 | 100% |
| Tamarisk scrub | 396 | 383 | 97% |
| **Subtotal** | **528** | **515** | **98%** |
| **Grassland Meadow** | | | |
| Valley needlegrass grassland | 49 | 41 | 84% |
| Disturbed valley needlegrass grassland | 215 | 25 | 12% |

**TABLE 4**
**HABITATS WITHIN THE APPROVED PLAN PRESERVE**

| Habitat Type | Existing Habitat Otay Ranch Ownership (Acres) | Habitat Within Management Preserve (Acres) | % of Total Habitat Within Preserve |
|---|---|---|---|
| Alkali meadow | 138 | 105 | 76% |
| Disturbed alkali meadow | 12 | 5 | 42% |
| Non-native grassland | 1,846 | 1,083 | 59% |
| **Subtotal** | **2,260** | **1,259** | **56%** |
| **Woodlands (Upland + Riparian)** | | | |
| Coast live oak woodland | 181 | 172 | 95%[2] |
| Southern coast live oak riparian forest | 75 | 66 | 88%[2] |
| Sycamore alluvial woodland | 7 | 6 | 86%[2] |
| Southern interior cypress forest | 165 | 157 | 95%[2] |
| Southern willow scrub | 14 | 13 | 93% |
| **Subtotal** | **442** | **414** | **94%** |
| **Marshes & Aquatic Habitat** | | | |
| Coastal & valley freshwater marsh | 3 | 3 | 100% |
| Aquatic | 3 | 0 | 0% |
| **Subtotal** | **6** | **3** | **50%** |
| **Other** | | | |
| Eucalyptus | 33 | 19 | 58% |
| Agriculture | 5,445 | 483 | 8.8% |
| Developed | 108 | 0 | 0% |
| **Subtotal** | **5,586** | **502** | **9%** |
| **TOTALS** | **22,899** | **11,375** | **50%** |

Notes:

[1] An additional 1,166 acres of Diegan coastal sage scrub will be included in non-Preserve open space.

[2] The RMP requires that 100% of these habitat types on Otay Ranch be preserved. Areas not included in the Preserve will be included in non-Preserve open space.

## NATIVE COMMUNITY TYPES

### 5.2.1 Diegan Coastal Sage Scrub

Coastal sage scrub is a drought-adapted community typically dominated by sparsely distributed semi-deciduous shrubs and subshrubs, with a diverse understory of annual forbs and perennial grasses. It frequently occurs on the driest slopes alternating with perennial (native) grassland. In San Diego County it is a widespread and fairly diverse plant community, extending from near the coast to about 2,000 feet elevation. According to Oberbauer (1991), coastal sage scrub has been reduced by 69 percent of its former coverage in San Diego County. Because many sensitive plant and wildlife species are restricted to this community, and because of its reduction in acreage, coastal sage scrub is considered a sensitive community.

Approximately 11,125 acres of coastal sage scrub habitat types of varying quality are located on Otay Ranch. These include Diegan coastal sage scrub and disturbed coastal sage scrub. Approximately 60 percent (about 6,621 acres) of the coastal sage scrub habitat on the property is proposed to be included within the Preserve. The Preserve encompasses the richest and most diverse portions of this habitat type, including the Salt Creek area, the lower Proctor Valley area, the lower slopes of the San Ysidro Mountains, much of the Jamul Mountains block, and most of Poggi and Wolf canyons. Coastal sage scrub within the Preserve provides habitat for numerous sensitive plant species and constitutes habitat for a viable population of California gnatcatchers that includes between 120 and 130 pairs. In addition, this habitat provides vital linkages to adjacent habitat offsite, much of which also supports sensitive native plants and gnatcatcher populations. Over 75 percent of the coastal sage scrub habitat mapped during the 1989 biology surveys that contained substantial concentrations of sensitive plant and wildlife species is included within the Preserve.

In addition to the 6,621 acres of coastal sage scrub habitat types included within the Preserve, approximately 1,166 acres of coastal sage scrub situated within "restricted development areas"

will be preserved in non-preserve open space associated with the development of the SPAs at the northern portion of Proctor Valley and the eastern end of the San Ysidro Mountains. Hence, the total number of acres of coastal sage scrub habitat types in open space is approximately 7,787 acres, 70% of the total acreage of coastal sage scrub habitat types on Otay Ranch.

### 5.2.2 Maritime Succulent Scrub

Maritime succulent scrub is a highly restricted type of coastal sage scrub that is confined primarily to south-facing slopes in coastal areas from about Torrey Pines south to El Rosario, Baja California. It is similar to Diegan coastal sage but contains a rich mixture of stem and leaf succulents such as *Dudleya, Opuntia*, *Mammalaria*, *Euphorbia*, *Bergerocactus*, *Simmondsia*, *Cleome*, and *Ferocactus*. According to Oberbauer (1991), this community has been reduced by approximately 92 percent in San Diego County, hence, it is considered a rare and sensitive habitat type. A total of 285 acres of maritime succulent scrub occurs on Otay Ranch, primarily in the Salt Creek and Poggi Canyon areas. This community is the primary habitat for the San Diego cactus wren. Approximately 80 percent (228 acres) of this habitat type is included within the Preserve.

### 5.2.3 Chaparral

Chaparral is a fire-adapted, Mediterranean-type community characterized by dense stands of shrubs with small sclerophyllous leaves. It frequently occurs on steep, north-facing slopes. Although coastal mixed chaparral (or maritime chaparral) has been reduced considerably in San Diego County, southern mixed chaparral and chamise chaparral have been reduced by only 6.5 and 22.1 percent, respectively (Hix 1990). Hence, these communities are not regarded as particularly sensitive at present. Many of the plant and wildlife species that occur in chaparral also occur in coastal sage scrub. Sensitive plants that occur primarily in this community onsite

include Otay manzanita (*Arctostaphylos otayensis*), Southern mountain-misery (*Chamaebatia australis*), San Miguel savory (*Calamintha chandleri*), Dunn's mariposa lily (*Calochortus dunnii*), Gander's pitcher-sage (*Lepechinia ganderi*), narrow-leaved nightshade (*Solanum tenuilobatum*), and Munz's sage (*Salvia munzii*). Approximately 2,667 acres of chaparral habitat occur on the Otay Ranch property, including about 1,226 acres of southern mixed chaparral and about 1,441 acres of chamise chaparral. Approximately 88 percent of the existing southern mixed chaparral is incorporated into the Preserve along with 52 percent of the chamise chaparral, for a total of about 1,833 acres.

### 5.2.4 Oak Woodland

In southern California, oak woodlands are associated with more mesic conditions than the scrub communities described above. In riparian situations, coast live oak (*Quercus agrifolia*) typically forms a closed canopy woodland; on moist north-facing slopes, Engelmann oak (*Quercus engelmannii*) often forms more open savannah woodlands. Oak woodlands support a remarkably wide variety of wildlife species. The structural complexity of the habitat provides nesting, foraging, and hiding areas for many birds, mammals and reptiles. Oaks also support a rich and diverse insect fauna. One sensitive plant species - San Diego sagewort (*Artemisia palmeri*) - occasionally occurs in riparian oak woodlands, and one federal Category 2 candidate butterfly - Harbison's dun skipper (*Euphyes vestris harbisoni*) - occurs in riparian oak woodlands almost everywhere that San Diego sedge (*Carex spissa*) occurs (Brown 1981). According to Hix (1990), oak woodland has been reduced by 3.4 percent of its former coverage in San Diego County. It is considered a sensitive habitat because of its extraordinarily high wildlife value (Block, Morrison, and Verner 1990). In addition to providing valuable wildlife habitat, oak woodlands also may function as corridors for wildlife movement. Coast live oak woodland and oak riparian forest together comprise approximately 256 acres of the Otay Ranch property. All of the oak woodlands onsite will be maintained in open space. Of the 181 acres of coast live

oak woodland, 172 will be incorporated into the Preserve; 9 acres will be included in open space in the residential estate area in the eastern portion of the Ranch. Of the 75 acres of coast live oak riparian forest, 66 acres will incorporated into the Preserve; 9 acres will be included in open space in the residential estate area.

### 5.2.5 Southern Interior Cypress Forest

Southern interior cypress forest is dominated by the endemic Tecate cypress (*Cupressus forbesii*) and occupies approximately 165 acres of the southeastern portion of the Otay Ranch within chaparral, on steep slopes, and in canyons of the San Ysidro Mountains. Tecate cypress occurs only in isolated populations throughout southern California, including the Santa Ana Mountains, Guatay Mountain, Tecate Mountain, and Otay Mountain, and in scattered locations in northern Baja California, Mexico. Populations of this cypress on Otay Mountain are the largest known. The extensive stands of Tecate cypress on and adjacent to Otay Ranch support the only known populations of the federal Category 2 candidate Thorne's hairstreak butterfly (*Mitoura thornei*) (Brown 1983). At the higher elevations of the property, the cypresses co-occur with other sensitive species, including southern mountain-misery (*Chamaebatia australis*), Otay manzanita (*Arctostaphylos otayensis*), Mexican flannelbush (*Fremontodendrom mexicana*), and Gander's pitcher-sage (*Lepechinia ganderi*). In places where the cypress forest extends into lower elevations along and within drainages, other sensitive plants species, such as San Diego marsh-elder (*Iva hayesiana*), spiny rush (*Juncus acutus* var. *sphaerocarpus*), and willowy monardella (*Monardella linoides*), co-occur with the cypress. The habitat immediately adjacent to the cypress forest near Jamul Creek at the east end of Lower Otay Reservoir, east of Borderlands Air Sport Center, supports at least two sensitive plant species - San Diego sunflower (*Viguiera laciniata*) and ashy spike-moss (*Selaginella cinerascens*) - and two sensitive butterfly species - Hermes copper (*Lycaena hermes*) and quino checkerspot (*Euphydryas editha quino*). Of 165 acres of southern interior cypress forest, 157 acres (95 percent) will be included within the Preserve. The remainder will be included in non-Preserve open space.

### 5.2.6 Sycamore Alluvial Woodland

Sycamore alluvial woodland is a moderately open, winter-deciduous, broad-leafed riparian woodland dominated by well spaced sycamores, with occasional willow and elderberry as a subcanopy (Holland 1986). It characteristically is found on wide, alluvial floodplains of intermittent streams and drainages with cobbly or bouldery substrates. This community occurs in the extreme southeastern portion of the San Ysidro Mountains block. All riparian woodlands are considered to represent high quality wildlife habitat. They are important sites of primary productivity and play an important role in nutrient cycling and water quality maintenance. Seven acres of sycamore alluvial woodland were mapped during the MBA/RECON efforts, and all of this habitat will be included within the Preserve or within non-Preserve open space.

### 5.2.7 Southern Willow Scrub

Southern willow scrub is restricted to riparian areas and major drainages. This community is dominated by willows (*Salix* spp.), with occasional individuals of western sycamores (*Platanus racemosa*), mule fat (*Baccharis salicifolia*), and Mexican elderberry (*Sambucus mexicanus*). The structural diversity of this community provides foraging and nesting habitat for numerous species of birds, and the associated aquatic and semi-aquatic areas provide habitats for numerous fish, amphibians, reptiles, birds, mammals, and insects. A small area of this vegetation type occurs immediately south of Lower Otay Reservoir. Of 14 acres of southern willow scrub present on Otay Ranch, 13 acres (93 percent) are included in the Preserve.

### 5.2.8 Perennial (Native) Grassland

Perennial (native) grassland or valley needlegrass grassland is dominated by native perennial grasses, including *Nassella*, *Poa*, *Elymus*, and *Muhlenbergia* (Hix 1990). The historical

distribution of this habitat is poorly known, but there is no question that it has been reduced considerably in San Diego County. Even in a disturbed condition, this habitat may be considered to constitute a valuable biological resource. Native grasslands provide habitat for several birds, mammals, and insect species. A total of 264 acres of Otay Ranch were mapped as valley needlegrass grassland - 215 acres as disturbed and 49 acres as undisturbed. Sixty-six acres (25 percent) of valley needlegrass grassland (41 acres of undisturbed and 25 acres of disturbed) will be included within the Preserve.

### 5.2.9 Otay Mesa Claypan Vernal Pools

Otay Mesa claypan vernal pool is a unique habitat type characterized by Mima mound topography forming a series of low mounds alternating with shallow depressions. The depressions are underlain by an impervious claypan that functions to retain rain water in the spring to form a perched water table. These ephemeral aquatic conditions support a unique flora and fauna highly adapted to the seasonally available water. Indicator species of vernal pool habitat include woolly marbles (*Psilocarphus brevissimus*), hyssop loose-strife (*Lythrum hyssopifolia*), Bigelow's plantain (*Plantago bigelovii*) , water pygmy-weed (*Crassula aquatica*), and fairy shrimp (*Branchinecta* spp.). Also associated with vernal pools are the sensitive plant species Otay Mesa mint (*Pogogyne nudiuscula*), California Orcutt's grass (*Orcuttia californica*), little mousetail (*Myosurus minimus* var. *apus*), San Diego button celery (*Eryngium aristulatum* var. *parishii*), and San Diego navarretia (*Navarretia fossalis*). Vernal pool areas typically occur in a matrix of coastal sage scrub, chaparral, or grasslands. The two major areas of vernal pools found on Otay Ranch - the mesa south of the Otay River Valley east of Brown Field and the southwest corner of the Jamul Mountains block - are included in the Preserve.

## SENSITIVE PLANT SPECIES

This section provides a summary of the Otay Ranch distribution of each sensitive plant species and general comments on populations included and excluded from the Preserve. Table 5 presents the agency status, general area of onsite distribution, and a summary value (expressed in percentage) of how well the Preserve protects each species. The latter is a subjective assessment of the overall quality and quantity of the onsite population(s) of each species that is incorporated into the Preserve. It is primarily a measure of the percentage of the area of the Otay Ranch distribution of each species included in the Preserve. However, where highest quality or highest density populations are included or excluded, the value increases or decreases accordingly. Additional details regarding species' distributions can be found in the technical biology reports completed by RECON, MBA, DUDEK and Ogden.

***Achnatherum diegoensis*** - San Diego County needlegrass occurs south of Poggi Canyon, in the southwestern and southeastern portions of the San Ysidro Mountains block, and in the Jamul Mountains block east of Proctor Valley Road and along Proctor Valley Creek. Most of the *Achnatherum diegoensis* onsite will be included within the Preserve.

***Acanthomintha ilicifolia*** - A large population of several thousand individuals of San Diego thorn-mint occurs north of Otay Lakes Road in the southwestern portion of the Jamul Mountains block. A smaller population of approximately 33 plants occurs to the northwest of the larger one. The larger population will be included within the Preserve as a disjunct island; the smaller population will be lost.

***Adolphia californica*** - California adolphia is common in some areas of the Otay River Valley block. Populations of this species adjacent to the Otay River Valley will be incorporated into the Preserve. Several scattered populations and individuals potentially will be lost.

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES**
**PRESENT ON OTAY RANCH**

| Plant Species | Agency Status | O. Ranch Distribution | % Retained in Preserve |
|---|---|---|---|
| *Acanthomintha ilicifolia* San Diego thorn-mint | USFWS: Candidate (Cat. 1)<br>CDFG: Endangered<br>CNPS: List 1B, 3-3-2 | SW Jamul Mountains block | 95% |
| *Adolphia californica* - California adolphia | USFWS: None<br>CDFG: None<br>CNPS: List 2, 1-2-1 | Otay River Valley block | 70-80% |
| *Ambrosia chenopodiifolia* - San Diego bur-sage | USFWS: None<br>CDFG: None<br>CNPS: List 2, 2-2-1 | Otay River block Johnson Canyon | 90-100% |
| *Arctostaphylos otayensis* - Otay manzanita | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 3-2-3 | Jamul Mts.<br>San Ysidro Mts. | 80% |
| *Artemisia palmeri* - San Diego sagewort | USFWS: None<br>CDFG: None<br>CNPS: List 2, 2-2-1 | Jamul Mountains | 90-100% |
| *Brodiaea orcuttii* - Orcutt's brodiaea | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 1-3-2 | Proctor Valley<br>San Ysidro Mts. | 75 |
| *Calamagrostis densa* - Dense reed grass | USFWS: Candidate (Cat. 3C)<br>CDFG: None<br>CNPS: List 4, 1-1-2 | Jamul Mts. | 90-100% |
| *Calamintha (Satureja) chandleri* - San Miguel savory | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 4, 1-1-2 | Jamul Mts. | 90-100% |
| *Calochortus dunnii* - Dunn's mariposa lily | USFWS: Candidate (Cat. 2)<br>CDFG: Rare<br>CNPS: List 1B, 2-2-2 | San Ysidro Mts.<br>Jamul Mts. | 90-100% |
| *Caulanthus stenocarpus* - Slender-pod caulanthus | USFWS: Candidate (Cat. 3B)<br>CDFG: Rare<br>CNPS: List 1B, 3-2-2 | Jamul Mts. | 75-85% |
| *Chamaebatia australis* - Southern mountain-misery | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-1-1 | Jamul Mts.<br>San Ysidro Mts. | 80-90% |
| *Chorizanthe procumbens* var. *albiflora* - Fallbrook spine-flower | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-1-3 | Poggi Canyon | present status unknown |

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES**
**PRESENT ON OTAY RANCH**

| | | | |
|---|---|---|---|
| *Clarkia delicata* - Campo clarkia | USFWS: None<br>CDFG: None<br>CNPS: List 2, 1-2-1 | Jamul Mts. | 75% |
| *Comarostaphylis diversifolia* ssp. *diversifolia* - Summer-holly | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 2-2-2 | San Ysidro Mts. | 70-80% |
| *Cordylanthus (Dicranostegia) orcuttianus* - Orcutt's bird's-beak | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 2, 3-3-1 | San Ysidro Mts. block | 75% |
| *Cupressus forbesi* - Tecate cypress | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: 1B, 2-2-2 | San Ysidro Mts. | 90-100% |
| *Dichondra occidentalis* - western dichondra or western pony foot | USFWS: Candidate (Cat. 3C)<br>CDFG: None<br>CNPS: List 4, 1-2-1 | Jamul Mts. block | 70-80% |
| *Dudleya variegata* - Variegated dudleya or San Diego hasseanthus | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 4, 1-2-2 | Otay River block Jamul Mts. | 75% |
| *Eryngium aristulatum* var. *parishii*- San Diego button-celery | USFWS: Endangered<br>CDFG: Endangered<br>CNPS: List 1B, 1-3-2 | Vernal pools on Otay Mesa | 95% |
| *Ferocactus viridescens* - San Diego barrel cactus | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 2, 1-3-1 | Much of Ranch | 75% |
| *Fremontodendron mexicanum* - Mexican flannelbush | USFWS: Candidate (Cat. 2)<br>CDFG: Rare<br>CNPS: 1B, 3-2-2 | San Ysidro Mts. | 90-100% |
| *Harpagonella palmeri* var. *palmeri* - Palmer's grappling hook | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 2, 1-2-1 | Proctor Valley Salt Creek | 60-70% |
| *Hemizonia conjugens* - Otay tarplant | USFWS: Candidate (Cat. 2)<br>CDFG: Endangered<br>CNPS: List 1B, 3-3-2 | Jamul Mts. Otay River Valley block | 80% |
| *Iva hayesiana* - San Diego marsh-elder or poverty weed | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 2, 2-2-1 | Drainages throughout Ranch | 75% |
| *Juncus actus* var. *sphaerocarpus* - Spiny rush | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-1-3 | Drainages throughout Ranch | 70-80% |

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES**
**PRESENT ON OTAY RANCH**

| | | | |
|---|---|---|---|
| *Lepechinia ganderi* - Gander's pitcher-sage | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 3-1-2 | Jamul Mts.<br>San Ysidro Mts. | 75-85% |
| *Lepidium latipes* Dwarf pepper-grass | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-1-2 | Proctor Valley | 0% |
| *Monardella linoides* spp. *viminea* - Willowy monardella | USFWS: Candidate (Cat. 2)<br>CDFG: Endangered<br>CNPS: List 1B, 2-3-2 | San Ysidro Mts. | 100% |
| *Muilla clevelandii* - San Diego goldenstar | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 2-2-2 | Otay Mesa<br>Jamul Mts. | 54% |
| *Myosurus minimus* var. *apus* - Little mousetail | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 3, 2-3-2 | K6 vernal pool area | 90-100% |
| *Navarettia fossalis* - San Diego navarretia | USFWS: Candidate (Cat. 1)<br>CDFG: None<br>CNPS: List 1B, 2-3-2 | Otay Mesa vernal pools | 100% |
| *Ophioglossum lusitanicum* spp. *californicum* - California adder's-tongue fern | USFWS: Candidate (Cat. 3C)<br>CDFG: None<br>CNPS: List 4, 1-2-2 | Proctor Valley | 50% |
| *Opuntia parryi* var. *serpentina* - snake cholla | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 3-3-2 | Salt Creek<br>Poggi & Wolf Canyons | 80% |
| *Orcuttia californica* - California Orcutt grass | USFWS: Candidate (Cat. 1)<br>CDFG: Endangered<br>CNPS: List 1B, 2-3-2 | Otay Mesa vernal pools | present status unknown |
| *Physalis greenei* - Greene's ground-cherry | USFWS: None<br>CDFG: None<br>CNPS: List 3, no R-E-D rating | Salt Creek | 50% |
| *Pickeringia montana* ssp. *tomentosa* Chaparral-pea | USFWS: None<br>CDFG: None<br>CNPS: Dropped from sensitivity listings: too common and widely distributed | Jamul Mts.<br>San Ysidro Mts. | 90-100% |
| *Pogogyne nudiuscula* - Otay Mesa mint | USFWS: Candidate (Cat. 1)<br>CDFG: Endangered<br>CNPS: List 1B, 3-3-2 | Otay Mesa vernal pools | 90-100% |

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES**
**PRESENT ON OTAY RANCH**

| | | | |
|---|---|---|---|
| *Quercus engelmannii* - Engelmann oak | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-2-2 | San Ysidro Mts. block | 90-100% |
| *Romneya coulteri* - Coulter's matilija poppy | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-1-3 | San Ysidro Mts.<br>Jamul Mts. | 50% |
| *Salvia munzii* - Munz's Sage | USFWS: None<br>CDFG: None<br>CNPS: List 2, 2-2-1 | Jamul Mts. | 46% |
| *Selaginella cinerascens* - Ashy spike-moss or mesa clubmoss | USFWS: None<br>CDFG: None<br>CNPS: List 4, 1-2-1 | Throughout the Ranch | 70-80% |
| *Solanum tenuilobatum* - Narrow-leaved nightshade | USFWS: Candidate (Cat. 2)<br>CDFG: None<br>CNPS: List 1B, 3-1-3 | Jamul Mts. | 75% |
| *Achnatherum diegoensis* - San Diego County needlegrass | USFWS: None<br>CDFG: None<br>CNPS: List 2, 3-1-1 | All three blocks | 75% |
| *Viguiera laciniata* - San Diego sunflower | USFWS: None<br>CDFG: None<br>CNPS: List 2, 1-2-1 | Throughout coastal sage scrub | 75% |
| **Wildlife Species** | **Agency Status** | **O. Ranch Distribution** | **% Retained in Preserve** |
| *Polioptila californica californica*- California gnatcatcher | USFWS: Threatened<br>CDFG: Species of Special Concern | All three major blocks | 52% |
| *Aquila chrysaetos* - Golden eagle | USFWS: None<br>CDFG: Species of Special Concern | N/A | N/A |
| *Campylorhynchus branneicapillus sandiegensis* - Coastal cactus wren | USFWS: None<br>CDFG: Species of Special Concern | Otay Valley River block | No loss of viable populations |
| *Athene cunicularia* - Burrowing owl | USFWS: None<br>CDFG: Species of Special Concern | Poggi Canyon | 80-90% |
| *Circus cyaneus hudsonius* - Northern harrier | USFWS: None<br>CDFG: Special of Special Concern | N/A | N/A |

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES**
**PRESENT ON OTAY RANCH**

| | | | |
|---|---|---|---|
| *Accipiter cooperi* - Cooper's hawk | USFWS: None<br>CDFG: Species of Special Concern<br>Blue List 1972-1981, 1986<br>Special Concern 1982 | N/A | N/A |
| *Falco mexicanus* - Prairie falcon | USFWS: None<br>CDFG: Species of Special Concern | N/A | N/A |
| *Vireo bellii pusillus* least Bell's vireo | USFWS: Endangered<br>CDFG: Endangered | Otay River parcel. | 100% |
| *Empidonax trailii extimus* Southwestern willow flycatcher | USFWS: Candidate (Cat. 1)<br>CDFG: Endangered | Otay River parcel. | 100% |
| *Agelaius tricolor* Tricolored blackbird | USFWS: Candidate (Cat. 2)<br>CDFG: Species of Special Concern | Otay River parcel. | 100% |
| *Streptocephalus woottoni* Riverside fairy shrimp | USFWS: Proposed Endangered<br>CDFG: None | Otay River parcel. | 100% |
| *Branchinecta sandiegonensis* San Diego fairy shrimp | USFWS: None<br>CDFG: None | Otay River parcel. | 95% |
| *Aimophila bellii bellii* Bell's Sage sparrow | USFWS: Candidate (Cat. 2)<br>CDFG: None | All parcels | 70-75% |
| *Aimophila ruficeps canescens* Southern California Rufous-crowned sparrow | USFWS: Candidate (Cat. 2)<br>CDFG: None | All parcels | 70-75% |
| *Phyrnosoma coronatum blainvillei* - San Diego horned lizard | USFWS: Candidate (Cat. 2)<br>CDFG: Species of Special Concern | Throughout Ranch in coastal sage scrub | 60-70% |
| *Cnemidophorus hyperythrus beldingi* Orange-throated whiptail | USFWS: Candidate (Cat. 2)<br>CDFG: Species of Special Concern | Throughout Ranch in coastal sage scrub | 60-70% |
| *Thamnophis Thammondii* - Tow striped garter snake | USFWS: Candidate (Cat. 2)<br>CDFG: None | Wetlands | 90-100% |
| *Rana aurora draytoni* California red-legged frog | USFWS: Candidate (Cat. 2)<br>CDFG: Species of Special Concern | Otay River parcel. | 100% |
| *Clemmys marmorata pallida* Southwestern pond turtle | USFWS: Candidate (Cat. 2)<br>CDFG: Species of Special Concern | Otay River parcel | 100% |

**TABLE 5**
**SENSITIVE PLANT AND WILDLIFE SPECIES PRESENT ON OTAY RANCH**

| | | | |
|---|---|---|---|
| *Lycaena hermes* - Hermes copper | USFWS: Candidate (Cat. 2)<br>CDFG: None | San Ysidro Mts. block | 100% |
| *Euphydryas editha quino* - quino checkerspot | USFWS: Candidate (Cat. 1)<br>CDFG: None | San Ysidro Mts.<br>Jamul Mts. blocks | 100% |
| *Mitoura thornei* - Thorne's hairstreak | USFWS: Candidate (Cat. 2)<br>CDFG: None | San Ysidro Mts. block | 100% |
| *Euphyes vestris harbisoni* - Harbison's dun skipper | USFWS: Candidate (Cat. 2)<br>CDFG: None | Riparian oak woodlands | 100% |

***Ambrosia chenopodiifolia*** - On Otay Ranch, San Diego bur-sage was observed on the J23-24 and J29-30 vernal pool areas and at the top of the slope in upper Johnson Canyon. All of these populations will be included in the Preserve.

***Arctostaphylos otayensis*** - Small populations of Otay manzanita were observed in the Jamul Mountains block immediately north of the BLM inholding and in the isolated parcel south of the San Ysidro Mountains block. Both sites are included within the Preserve.

***Artemisia palmeri*** - In the Jamul Mountains area, very few individuals of San Diego sagewort were observed in alkali meadow habitat in a narrow canyon east of Proctor Valley Road. This drainage is included within the Preserve. ***Brodiaea orcuttii*** - Five individuals of Orcutt's brodiaea were observed in a stream channel in the western portion of the San Ysidro Mountains block; and a large population was observed in Proctor Valley and some of its tributaries within the Jamul Mountains area. The population in the San Ysidro Mountains block is outside of the Preserve area. The Upper Proctor Valley population is included within the Preserve, and *Brodiaea orcuttii* would be conserved here pending habitat changes in water quality.

***Calamagrostis densa*** - Dense reed grass was observed on a peak at 464 m (1,523 feet) in the northwestern portion of the Jamul Mountains block along with several other sensitive plants. The area occupied by this species is included in the Preserve.

***Calamintha (Satureja) chandleri*** - San Miguel savory was found on the project site near the summit of Callahan Mountain in the Jamul Mountains block, immediately adjacent to the large BLM inholding. This area is included within the Preserve.

***Calochortus dunnii*** - Five individuals of this species were observed in a small, grassy area adjacent to coastal sage scrub in the isolated parcel near the upper end of Little Cedar Canyon. A small population also was observed at a peak in the northwest corner of the Jamul Mountains block with other rare species. Both populations are included within the Preserve.

***Caulanthus stenocarpus*** - On Otay Ranch, slender-pod caulanthus was observed along with several other sensitive plants at a 464 m (1523 foot) peak in the northwest corner of the Jamul Mountains block. This population will be included within the Preserve; however, other undetected populations may not be included.

***Chamaebatia australis*** - In the Jamul Mountains block, southern mountain-misery occurs in abundance in several patches in the higher elevations. Two small patches were observed in the San Ysidro Mountains block: one in the isolated parcel adjacent to Little Cedar Canyon and the other in the steep canyon on the west side of the block. Nearly all of the southern mountain-misery found onsite is included within the Preserve.

***Chorizanthe procumbens* var. *albiflora*** - Fallbrook spineflower was observed on heavily weathered mesa soils associated with vernal pools northeast of Poggi Canyon. The present status of this species on the Ranch is unknown; it was not detected during the 1990 rare plant or vernal pool surveys.

***Clarkia delicata*** - One population of Campo clarkia was found in a canyon northeast of Callahan Mountain. This site is within the Preserve.

***Comarostaphylis diversifolia* ssp. *diversifolia*** - A few isolated individuals of summer-holly were observed in the canyons in the central and western portions of the San Ysidro Mountains block. Most individuals are included in the Preserve.

***Cordylanthus (Dicranostegia) orcuttianus*** - On Otay Ranch, Orcutt's bird's-beak was found only in the large drainage south of the Borderland Air Sports Center. This drainage will be maintained as open space within the Preserve.

***Cupressus forbesii*** - Tecate cypress occurs in a few drainages and on the north slopes at upper elevations throughout the San Ysidro Mountains Block. Areas with the highest concentration of cypress trees are located in the steep canyon on the west side of the San Ysidro Mountains parcel and on the slopes of Little Cedar Canyon. Nearly all of the Tecate cypress on Otay Ranch is included in the Preserve.

***Dichondra occidentalis*** - Western dichondra was observed occasionally on Otay Ranch on the low hills east and west of Proctor Valley, at some locations in the Jamul Mountains, and on the west side of the Minnewawa truck trail near Otay Lakes Road. Most of these populations are incorporated into the Preserve.

***Dudleya variegata*** - Variegated dudleya is fairly common on the mesa area south of the Otay River Valley, in coastal sage scrub in the western portion of the San Ysidro Mountains block, and in the southern portion of the Jamul Mountains block. Approximately 75% of this species' onsite distribution is included in the Preserve.

***Eryngium aristulatum* var. *parishii*** - On Otay Ranch, San Diego button-celery is known only from vernal pool habitat in the southeastern portion of the Otay River Valley block in the vernal pool series J23, 24, 25, 29, and 30. It is found in many of the pool-like depressions in the annual (non-native) grassland to the immediate east of Brown Field. Most of the San Diego button-celery on Otay Ranch occurs within the Preserve.

***Ferocactus viridescens*** - San Diego barrel cactus occurs throughout much of the coastal sage scrub habitat on the Otay Ranch. The highest concentration of this species is found on the east side of Salt Creek in the Otay River Valley block. Approximately 75% of the San Diego barrel cactus found onsite is included within the Preserve.

***Fremontodendron mexicanum*** - Three individuals of Mexican flannelbush, representing the only known population in the U.S., were observed in upper Cedar Canyon on the east side of the San Ysidro Mountains block. This small population will be included within the Preserve.

***Harpagonella palmeri* var. *palmeri*** - A population of 50 to 100 individuals of Palmer's grappling hook was found in northern Proctor Valley early in the 1990 survey period. This species also occurs in the Salt Creek area. The population in northern Proctor Valley (in the Jamul Mountains block) is outside of the Preserve boundary; the Salt Creek population is within the Preserve.

***Hemizonia conjugens*** - According to old collections and soils maps, Otay tarplant probably occurred at many locations on and around the Otay Ranch prior to agriculture and development. Although this species was not detected on Otay Ranch in 1989 by either RECON or MBA, it was found in many locations in 1990 (MBA 1990, RECON 1990). Within the Jamul Mountains block, one large population of about 10,000 plants covering approximately 40 acres occurs adjacent to Salt Creek Ranch in the detached 40 acre parcel. A small population was found in

the southern portion of the inverted "L" shaped parcel. In the Otay River Valley block, populations of Otay tarplant were observed in Salt Creek and Wolf Canyon. It also has been observed north of Poggi Canyon adjacent to Telegraph Canyon Road and on the north slope of Rock Mountain. Populations in the Jamul Mountains block are outside of the Preserve; populations in the Otay River Valley block mostly are within the Preserve.

***Iva hayesiana*** - San Diego marsh-elder was observed in many of the drainages onsite, including much of the Otay River Valley, the northwestern corner and southern portions of the Jamul Mountains block, and in the central and eastern portions of the San Ysidro Mountains block. This species is abundant in some stretches of Proctor Valley Creek and its tributaries, and in several of the intermittent streams of the Jamul Mountains. Most of this species' onsite distribution is conserved within the Preserve.

***Juncus acutus* var. *sphaerocarpus*** - Spiny rush is occasional in many of the major drainages on the Otay Ranch. Most of the individuals onsite are included within the Preserve.

***Lepechinia ganderi*** - Gander's pitcher-sage is known to occur with several other sensitive plant species at three sites in the Jamul Mountains. It was most common on a ridgeline leading to Callahan Mountain beginning at about 1,523 ft (464 m) elevation. Small populations of this plant were observed at several localities on north-facing slopes surrounding Callahan Mountain. Isolated clumps of Gander's pitcher sage occur in the chaparral and the drainages along the Minnewawa Truck Trail in the central part of the San Ysidro Mountains block. Nearly all of Gander's pitch-sage onsite will be included within the Preserve.

***Monardella linoides* spp. *viminea*** - Willowy monardella occurs on the Otay Ranch in a channel at the bottom of a deep canyon on the west side of the San Ysidro Mountains block. This is the only known extant population outside of the Miramar area, and thus, represents a significant disjunction. It is estimated that the population on Otay Ranch consists of several hundred

individuals. The canyon in which willowy monardella occurs supports several other sensitive plant species and is included in the Preserve.

***Muilla clevelandii*** - San Diego goldenstar occurs near vernal pools on Otay Mesa in the southeastern part of the Otay River Valley block and in the southern and northern portions of the Jamul Mountains block. Although populations on Otay Mesa south of the Otay River Valley will be included within the vernal pool portion of the Preserve, populations in the southern portion of the Jamul Mountains block and most of those in the upper Proctor Valley area are outside the Preserve.

***Myosurus minimus* var. *apus*** - Little mousetail was observed in only two vernal pools at opposite ends of the K6 vernal pool mesa. The reported Proctor Valley population has not been seen during surveys over the last three years (1989-1991). The two "populations" of little mousetail on the K6 vernal pool area are both within a small isolated unit of the Preserve.

***Navarettia fossalis*** - San Diego navarettia was observed in two isolated vernal pools on Otay Mesa immediately east of Brown Field (1991 survey). The area is included in the Preserve.

***Ophioglossum lusitanicum* ssp. *californicum*** - During the 1990 field work, California adder's-tongue fern was found to be locally abundant in the lower Proctor Valley area on both City of San Diego and Baldwin owned lands. It is found on both sides of Proctor Valley Creek where it exists as a dominant herb and covers approximately 60 acres of relatively level land associated with mima mounds and vernal pools. It also occurs in the northern end of the valley. Although populations of this species associated with vernal pools are conserved within the Preserve, several populations are outside.

***Opuntia parryi* var. *serpentina*** - The greatest concentrations of snake cholla on Otay Ranch are in Salt Creek Canyon and portions of Poggi and Wolf canyons. It also occurs along the northern

slope of the Otay River. Most populations (80%) of this species are included within the Preserve.

***Orcuttia californica*** - On Otay Ranch, California Orcutt grass was reported from a single vernal pool area (in an artificial stock pond) east of Brown Field by Tim Cass in 1983. It was not observed there during surveys in 1989, 1990, or 1991.

***Physalis greenei*** - Greene's ground-cherry is known from beneath large cactus stands in Salt Creek. This area will be included in the Preserve.

***Pickeringia montana* ssp. *tomentosa*** - Although chaparral-pea is no longer regarded as a sensitive species by CNPS, it is a unique element of the endemic flora of the Jamul/San Ysidro mountain system, and typically occurs with several other sensitive plants. Most populations of this species are included within the Preserve.

***Pogogyne nudiuscula*** - Otay Mesa mint occurs in several of the vernal pools on Otay Mesa in the southeast corner of the Otay River Valley block, in the J23-25, J29, and J30 series. With the exception of the adjacent J26 vernal pool area, the overwhelming majority of Otay Mesa mint still extant in the U.S. occurs on Otay Ranch. Nearly all of it will be included in the Preserve.

***Quercus engelmannii*** - On Otay Ranch, Engelmann oaks occur in some shaded canyons as part of the coast live oak dominated riparian oak woodlands. This species is common in Cedar Canyon and in oak woodlands near Thousand Trails campground in the San Ysidro Mountains block. Nearly all of the Engelmann oak onsite is included within the Preserve.

***Romneya coulteri*** - Coulter's matilija poppy occurs sporadically throughout the San Ysidro Mountains block; it is most common in the eastern portion. It also was observed in several locations in the Jamul Mountains block, primarily at high elevations. Much of Coulter's matilija poppy in the San Ysidro Mountains block is outside the Preserve; most of it present in the Jamul Mountains block is included within the Preserve.

***Salvia munzii*** - Munz's sage occurs from Proctor Valley Road to the peak at the south end of the Jamul Mountains, continuing down the slopes above Lower Otay Reservoir. A large concentration of this species also was observed on the lower slopes of the western portion of the Jamul Mountains block. It is likely that the Baldwin ownership comprises the majority of the distribution of Munz's sage in California. Approximately 46% of this species is included within the Preserve boundaries.

***Selaginella cinerascens*** - Ashy spike-moss occurs in many areas of Otay Ranch in undisturbed coastal sage scrub and chaparral habitats. Probably 70-80% of the ashy spike-moss onsite will be included in the Preserve.

***Solanum tenuilobatum*** - Narrow-leaved nightshade is known from several sites on Otay Ranch, including the peak at the northwest end of the Jamul Mountains block, a site northeast of Upper Otay Reservoir, and an area east of Camp Minnewawa. During the 1990 surveys, it was found to be very common in foothills east of Proctor Valley and all along the southern part of the Jamul Mountains block. Most of the populations of this species onsite are included within the Preserve System.

***Viguiera laciniata*** - San Diego sunflower is a major component in much of the coastal sage scrub habitat on Otay Ranch. Seventy-five percent of this species will be conserved within the Preserve.

## SENSITIVE WILDLIFE SPECIES

This section provides a summary of the Otay Ranch distribution and population numbers of each sensitive wildlife species observed during the surveys. Table 4 presents the agency status, general area of onsite distribution, and a summary value (expressed in percentage) of how well the Preserve protects each species. The latter is a subjective assessment of the overall quality and quantity of the onsite population(s) of each species that is incorporated into the Preserve. It is primarily a measure of the percentage of the area of the Otay Ranch distribution of each species included in the Preserve. Additional details regarding species' distributions can be found in the technical biology reports included in Appendix A of the RMP.

***Polioptila californica californica*** - Approximately 144 pairs of California gnatcatchers occur on Otay Ranch. Because of population dynamics and variable meteorological conditions, which may have adverse impacts on younger animals, this number fluctuates from year to year. There is a major population of California gnatcatchers in each of the three blocks of Otay Ranch (i.e., Jamul Mountains, San Ysidro Mountains, and Otay River Valley). The population in the San Ysidro Mountains block is concentrated in the western portion of the block, and it is anticipated that this population will remain relatively intact within the Preserve. The population in the Jamul Mountains block (approximately 27 pairs) is concentrated in the southwestern portion of this block, although there are pairs widely distributed throughout the block: along the southern area between the K6 vernal pool area and the confluence of the Jamul and Dulzura creeks; along the eastern boundary of the block west of Jamul Creek; and adjacent to the city-owned lands in Proctor Valley. The population in the Otay River Valley block (i.e., Salt Creek) is the largest, and it is concentrated into the smallest area of habitat - Salt Creek. The latter is the most vulnerable population on the Ranch in the context of current development - Eastlake on the north and the Olympic Training Center on the east.

***Aquila chrysaetos*** - Golden eagles range throughout the United States, but are common only in the western half of the country. On Otay Ranch, adult eagles and immature fledglings were observed foraging over the grassland areas, and perching and foraging in the Otay River Valley in the western section of the property.

***Campylorhynchus branneicapillus sandiegensis*** - The large patches of cholla and maritime succulent scrub habitat in the western portion of the Otay River Valley block support a fairly large population of coastal cactus wrens. It is estimated that approximately 25 pairs inhabit this area. Cactus wrens were most concentrated in the Salt Creek area, and the co-occurrence there of several sensitive plant and wildlife species indicate that this area represents an extremely valuable biological resource.

***Athene cunicularia*** - The burrowing owl ranges throughout California in arid grasslands and open shrub communities. On the Otay Ranch, this species was observed only in Poggi Canyon and Otay Mesa of the Otay River Valley block. The large extent of potential habitat for this species on the property suggests that several pairs of burrowing owls may be present in the area.

***Circus cyaneus hudsonius*** - The northern harrier ranges throughout California and may be encountered in grasslands, open fields, and salt and freshwater marshes. This species is most common in the coastal lowlands, where as many as 10 (Tijuana River Valley) and 19 (Sweetwater Reservoir) have been observed. Observations of displaying pairs at Las Pulgas Creek and the Santa Margarita River suggest that small numbers of northern harriers still breed on Camp Pendleton. On Otay Ranch, this species was observed in Johnson Canyon in the Otay River Valley block.

***Accipiter cooperi*** - Cooper's hawk ranges through most of California and is a common winter migrant in San Diego County. In the County, Cooper's hawk breeds almost exclusively in oak

woodland habitats; in the winter they may be found in any woodland habitat (Unitt 1984). Populations of this species have declined steadily throughout the state probably as a result of habitat destruction, falconry, and pesticide abuse (Remsen 1979). Cooper's hawks were sighted both in Poggi Canyon and in Otay Valley.

***Falco mexicanus*** - The prairie falcon is a sensitive raptor whose populations have been reduced by falconers, collectors, and pesticide abuse. This species is widely distributed throughout the western United States in open rangeland, mountains, and deserts. It nests on cliffs, ledges, or rocky bluffs. In San Diego County, prairie falcons are common migrants but rare summer breeders (Unitt 1984). In the vicinity of Otay Ranch, this species was observed immediately off-site near Thousand Trails Campground.

***Vireo bellii pusillus*** - On Otay Ranch, least Bell's vireo is an occasional visitor and possible seasonal resident in the Otay River Valley and in the riparian habitat east of the San Diego Air Sports Center. All potential vireo habitat is included within the Preserve.

***Empidonax trailii*** - The willow flycatcher is a likely resident in the Otay River Valley and in the riparian habitat east of the San Diego Air Sports Center. All potential habitat for this species will be included within the Preserve.

***Amphispiza bellii*** - Bell's sage sparrow occurs in chaparral and coastal sage scrub throughout the Ranch. Because large contiguous patches of these habitat types will be included within the Preserve, a significant portion of the Bell's sage sparrow population on the Ranch will be protected.

***Aimophila ruficeps canescens*** - Southern California rufous-crowned sparrow is a common inhabitant of coastal sage scrub; it is present in all three parcels. Because 70% of the coastal

sage scrub on the Ranch will be included in the Preserve, this species will receive adequate protection.

***Clemmys marmorata pallida*** - Southwestern pond turtle is restricted to freshwater habitats. Although it is undocumented from the Ranch, it may be present in the Otay River Valley. The preservation of 95% of wetlands on the Ranch will provide protection for potential habitat for this species.

***Rana aurora*** - The red-legged frog has not been documented from the Ranch but potential wetland habitat is present. Because 95% of the wetlands on the Ranch will be included in the Preserve, this species will receive adequate protection.

***Streptocephalus woottoni.*** The Riverside fairy shrimp is an exceedingly rare species; it is documented from a single pool on the Ranch. The flora and hydrology of vernal pools on Otay Ranch have been subject to fairly intensive investigation. The existing data strongly suggest that the only potential habitat for the Riverside fairy shrimp on Otay Ranch is on Otay Mesa in an area proposed for inclusion in the vernal pool preserve.

***Branchinecta sandiegoensis.*** The San Diego fairy shrimp is the most widespread species of fairy shrimp in San Diego County, ranging from Del Mar to Ramona (Simovich and Fugate 1992), and south into northern Baja California, Mexico (Brown, Wier and Belk 1993). It is widespread on Otay Ranch, although most common in the vernal pool areas which will be included in the Preserve.

***Phrynosoma coronatum blainvillei*** - San Diego horned lizard was observed sparingly in all three major blocks of the Otay Ranch property. It is expected to be present in much of the open coastal sage scrub habitat onsite. It also may occur in chaparral and vernal pool habitats.

***Cnemidophorus hyperythrus beldingi*** - Although the orange-throated whiptail was observed only in the southern portion of the Jamul Mountains block, this species probably is present in much of the coastal sage scrub habitat on Otay Ranch.

***Thamnophis hammondii*** - On Otay Ranch, a single individual of the two-striped garter snake was observed in one of the ponds in the San Ysidro Mountains block. It is restricted to wetland habitats, nearly all of which will be preserved or enhanced on Otay Ranch.

***Lycaena hermes*** - On Otay Ranch, Hermes copper has been collected only in the vicinity of Jamul Creek east of Borderland Air Field. However, it is likely to be present wherever large stands of redberry (*Rhamnus crocea*) grow among flat-top buckwheat (*Eriogonum fasciculatum*).

***Euphydryas editha quino*** - On Otay Ranch, the quino checkerspot has been collected in the area of the K6 vernal pools north of Otay Lakes Road, in the vicinity of Jamul Creek east of the Borderland Air Field, in Proctor Valley, and on Otay Mesa northeast of the prison. Although historically it had a wide distribution on Otay Ranch, it is either exceedingly restricted or absent from the ranch now.

***Mitoura thornei*** - Thorne's hairstreak is a San Diego County endemic known only from Otay Mountain. The insect always is associated with Tecate cypress (*Cupressus forbesii*), the sole larval host plant. The northern slopes of the San Ysidro Mountains support large populations of this species. Thorne's hairstreak also ranges down slope in ravines and creek beds that support the host trees (e.g., Jamul Creek, Cedar Canyon). Because of its extraordinarily restricted range, this species is considered sensitive by local and federal wildlife agencies.

***Euphyes vestris harbisoni*** - Although Harbison's dun skipper has not been documented from Otay Ranch, San Diego sedge, the larval host plant of the insect, is present in each of the three

major blocks. Throughout most of San Diego County, wherever the sedge occurs the butterfly also occurs (Brown 1983).

## 5.3 Wildlife Corridors

An important objective of the Preserve is the maintenance of local and regional wildlife corridors interconnecting the larger blocks of open space and native habitat. Corridors provide linkages between otherwise disjunct habitat patches thereby facilitating wildlife movement resulting in gene flow, increased foraging habitat, and maintenance of access to habitat patches by larger predators (i.e., maintenance of complex food webs). Corridors function to reduce the adverse affects of habitat fragmentation. Wildlife corridors on Otay Ranch are shown in Figure A. Information presented in Phase 1 RMP represents the findings of the first phase of the study that concentrated mainly on the Otay River parcel and Little Cedar Canyon. Preliminary studies focused on bobcat, mule deer, and mountain lions.

Major regional wildlife corridors in the Otay Ranch area identified through preliminary studies include the following:

The Otay River Valley, providing a linkage between Lower Otay Lakes and the portion of the Otay River Valley that lies to the west of Otay Ranch. The Otay River Valley is included in its entirety within the Preserve.

O'Neal Canyon, providing a linkage between the Otay River Valley corridor and the western portion of the San Ysidro Mountains. The mouth of O'Neal Canyon, at the Otay River Valley, is included within the Preserve; the remainder of the corridor is offsite on adjacent BLM property.

Little Cedar Creek and Jamul Creek, providing an important linkage between the northern portion of the San Ysidro Mountains and the eastern portion of the Jamul Mountains. The portions of the Little Cedar Creek/Jamul Creek corridor present on Otay Ranch are included within the Preserve. However, much of the Jamul Creek corridor runs through the Daley property immediately adjacent to the Jamul Mountains block of Otay Ranch.

A corridor across Proctor Valley connecting the southwestern portion of the Jamul Mountains with the southeastern portion of San Miguel Mountain. This corridor is mostly outside the Preserve boundaries, occupying the canyon that is the site of the proposed conference center.

Local wildlife corridors identified during preliminary studies include the following:

Wolf Canyon, Johnson Canyon, and Salt Creek, all of which function basically as cul-de-sacs, and all of which are included within the biological resources preserve system.

A corridor across the northwestern corner of the Jamul Mountains block connecting the northern portion of the Jamul Mountains with San Miguel Mountain.

Presently there is no corridor connecting Poggi Canyon and Wolf Canyon. Following the proposed development, an artificial linkage should be created between these two canyons to retain the biological integrity of Poggi Canyon.

In addition to these topographically well-defined corridors (i.e., canyons, riverbeds), wildlife movement is likely to occur in other habitats onsite. For example, wildlife use the area on the southeastern side of Lower Otay Reservoir to move eastward and northward from the Otay River Valley. Because of the absence of well-defined topographic features that may dictate routes travelled by wildlife, no specific corridors have been identified in this area. This portion of the Ranch will be studied more extensively in Phase 2. The narrow band of gnatcatcher-occupied coastal sage scrub adjacent to the western edge of Lower Otay Lakes (offsite of Otay Ranch) may provide habitat vital for linking Salt Creek gnatcatcher and cactus wren populations with those of the Jamul Mountains.

## 5.4 Cultural Resources

The following summarizes the known cultural resources on Otay Ranch and in the project area. This summary is derived from several sources. Refer to the Cultural Resources report and Draft EIR for more detailed information.

A literature review indicated that 13 cultural resource investigations have been performed on Otay Ranch, along with a number of informal surveys. Based on existing records, 180 cultural resource sites have been reported from the property. The following site types have been identified on Otay Ranch:

-- Prehistoric Lithic Scatter - Flaked lithic debitage and/or tools only (includes low density cobble procurement and testing).

-- Prehistoric Temporary Camp - Flaked lithic artifacts and at least one other artifact category such as groundstone or prehistoric rock feature; no identifiable midden.

-- Prehistoric Habitation Site - Flaked lithic artifacts and at least one other artifact category such as groundstone and identifiable midden.

-- Prehistoric Milling Station - At least one bedrock milling feature with or without associated artifacts (habitation site or temporary camp takes precedence if also present).

-- Prehistoric Quarry - Bedrock or very localized and focused cobble extraction or reduction areas.

-- Historic Rock Feature - Non-cemented rock features not directly associated with historic structures or with prehistoric artifacts.

-- Historic Refuse - Scatter of historic trash not associated with structure; also includes dumps.

-- Standing Historic Complex - Complex of standing historic buildings or features and associated artifacts.

-- Historic/Archeological Complex - Complex of historic building foundations or features and associated historic artifacts.

-- Historic Structure(s) - Historic foundation, pad, or identifiable feature(s) with or without associated historic artifacts.

-- Historic Features/Refuse - Rock features (not foundations) and associated historic artifacts without evidence of a structure.

-- Historic Structure on USGS Map - Historic structure indicated on map not relocated in the field.

Prior to recent and ongoing studies by Ogden (1991), 124 prehistoric cultural resource sites had been recorded on Otay Ranch. The Ogden survey located an additional 89 prehistoric sites on the property. These 89 prehistoric sites consist of 59 lithic scatters, 10 temporary camps, 10 milling stations, 1 habitation site, 5 quarries, and 1 lithic scatter/milling station, 2 lithic scatters/milling stations/quarries, and 1 lithic scatter/quarry.

Of the total 213 prehistoric sites now known to be present on the property, 88 are located on the 9,449-acre Otay Valley parcel, 80 on the 7,895-acre Proctor Valley parcel, and 45 on the 5,555-acre San Ysidro parcel. Of these 213 sites, 144 are categorized as lithic scatters, 27 as temporary camps, 15 as milling stations, 8 as habitation sites, 14 as quarries, 1 as a lithic scatter/milling station, 3 as lithic scatters/milling stations/quarries, and 1 as a lithic scatter/quarry.

The 88 prehistoric sites located within the Otay Valley parcel consist of 57 lithic scatters, 23 temporary camps, 1 milling station, 4 habitation sites, and 3 quarries. The 80 prehistoric sites located within the Proctor Valley parcel consists of 55 lithic scatters, 1 temporary camp, 10 milling stations, 2 habitation sites, 7 quarries, 1 lithic scatters/milling station, 3 lithic scatters/milling stations/quarries, and 1 lithic scatter/quarry. The 55 prehistoric sites located within the San Ysidro parcel consists of 32 lithic scatters, 3 temporary camps, 4 milling stations, 2 habitation sites, and 4 quarries.

Forty-nine historic resources have been identified within the project area. Three standing historic complexes have been identified within Otay Ranch, and all appear to be potentially significant historic resources: Otay Ranch (CA-SDi-11,384H), Rancho del Otay (CCA-SDi-11,419H), and Bird Ranch (CA-SDi-11,386H). Each consists of ranch residences and other out-buildings, corrals, and structural foundations. Bird Ranch also has a unique 20-sided quail farm structure.

Of the 49 historic sites, 15 are located on the Otay Valley parcel, 15 on the Proctor Valley parcel, and 19 on the San Ysidro parcel. Of the 15 unverified historic map locations identified by RECON (1989), 4 are located on the Otay Valley parcel, 6 on the Proctor Valley parcel, and 5 on the San Ysidro parcel. Of the 49 historic sites, 17 are categorized as historic rock features, 8 as historic refuse, 3 as standing historic complexes, 2 as historic/archeological complexes, 13 as individual historic structures, 4 as historic features/refuse, 1 as historic refuse/historic rock feature and 1 ad historic refuse/historic structure.

The high concentration of prehistoric sites along the Otay River Valley lends itself well to preservation and provides an opportunity for interpretation of cultural resources *in situ*. The Otay River Valley provides an ideal setting for a potential cultural/biological resources interpretive center. Sites along the Otay River and at Hubbard Springs are included within the Preserve.

In addition to sites which consist entirely of either prehistoric or historic components, a number of the sites on Otay Ranch contain both prehistoric and historic components. These sites are often referred to as multi-component sites. Co-occurrence of prehistoric and historic occupation can be either entirely co-incidental or it can be because of the presence of a resource that was valued both in prehistoric and historic times. Frequently this resource was water, in the form of a spring or spring-fed drainage. Coincidental occurrences are most frequently in areas where prehistoric lithic procurement activities have resulted in extensive lithic scatters, which co-occur

with agricultural fields, rock walls, and homesteads of early farming activities. Primarily for counting purposes, these sites are presented separately from the purely prehistoric or historic sites. As will be indicated below, they will require a combination of mitigation and treatment measures already presented for the prehistoric and historic sites.

Thirty prehistoric/historic multi-component resources located within the project area (the Otay River, Proctor Valley, and San Ysidro parcels) were identified through Ogden's field and archival investigations. Included in the total are 20 previously recorded sites, and 10 sites identified during Ogden's intensive cultural resources survey. Of the 30 prehistoric/historic sites, 4 are located on the 9,449-acre Otay Valley parcel, 16 on the 7,895-acre Proctor Valley parcel, and 10 on the 5,555-acre San Ysidro parcel. Of the 30 sites, 1 would be categorized as a prehistoric habitation site/historic structure, 2 as prehistoric lithic scatters/historic refuse scatters, 1 as a prehistoric milling station/historic refuse scatter, 11 as prehistoric lithic scatters/historic rock features, 2 as prehistoric lithic scatters/historic structures, 1 as a prehistoric lithic scatter/prehistoric temporary camp/historic rock feature, 9 as prehistoric lithic scatters/historic structures, 1 as a prehistoric lithic scatter/prehistoric milling station/historic structure, 1 as a prehistoric lithic scatter/prehistoric lithic scatter/historic archaeological complex.

The 4 prehistoric/historic sites located within the Otay Valley parcel include 3 prehistoric lithic scatters/historic structures and 1 prehistoric lithic scatter/historic rock feature. The 16 prehistoric/historic sites located within the Proctor Valley parcel consist of 1 prehistoric habitation site/historic structure, 1 prehistoric lithic scatter/historic refuse scatter, 1 prehistoric milling station/historic refuse scatter, 6 prehistoric lithic scatters/historic rock features, 2 prehistoric lithic scatters/historic structures, 1 prehistoric lithic scatter/prehistoric milling station/historic structure, 1 prehistoric lithic scatter/prehistoric milling station/prehistoric temporary camp./historic structure, and 1 prehistoric lithic scatter/historic archaeological complex. The 10 historic sites located within the San Ysidro parcel include 1 prehistoric lithic

scatter/historic refuse scatter, 4 prehistoric lithic scatters/historic rock features, 1 prehistoric lithic scatter/prehistoric temporary camp/historic rock feature, and 4 prehistoric lithic scatters/historic structures.

### 5.4.1 Prehistoric Resources

The Otay Ranch project includes several interrelated steps to ensure that prehistoric and historic resources are preserved and protected through ongoing and comprehensive study and management. Given the large acreage involved in the Otay Ranch project and the presence of hundreds of cultural resource sites across the property, the project affords a unique opportunity to investigate, interpret, and preserve significant resources. The Cultural Resource Management Plan (CRMP) for Otay Ranch is summarized below.

For the CRMP to be comprehensive, the following elements are required for both historic and prehistoric resources: 1) all resources (both prehistoric and historic) within the area of potential effect must be identified, 2) the importance of each resource within the affected area must be clearly established based on the knowledge that the realm of sites within the project has been established and that comparison of site types and importance is consistent within that realm, 3) the type and degree of impact is established in terms of direct/indirect, short-term/long-term, significant/insignificant, and 4) development plans are specific enough to accurately determine if the proposed mitigation is feasible and will, in fact, mitigate the impacts to below a level of significance.

At this stage of the CRMP planning, several of the elements presented below are proposed for later stages of planning; not all of the resources have been identified, importance of the resources is assumed rather than verified, impacts are still problematic rather than specific, and development plans are still conceptual. Given these limitations, development of the mitigation plan is necessarily programmatic rather than resource specific.

Stage 1

In conjunction with the first SPA application with each parcel (Otay Valley, Proctor Valley and San Ysidro) a comprehensive cultural resources study to assess cultural resources throughout that parcel shall be performed. The rationale for performing the survey for the entire parcel at one time is because it will be cost-effective, it will allow for preparation of a single document that can be comprehensive and take into account all of the resources within the parcel and not just the SPA Plan area, and it will provide reviewers with a more complete data base upon which to formulate planning decisions. The applicant shall complete the survey of each parcel as soon as feasible and no later than approval of the first SPA Plan within each parcel.

Stage 2

Stage 2 will be site importance and boundary testing for each resource identified within the first SPA Plan based on an approved research design, and for a sample of site types within the overall project. Site testing is required to adequately assess the sites for their importance under CEQA and local guidelines. A sample of site types beyond the SPA area may be tested as a means of gaining comparative information and to develop a specific program for mitigation and resource management; decisions regarding testing of sites outside the SPA area shall be based on the results of the systematic parcel survey concluded during Stage 1. This would include a report to be prepared by a qualified consultant to be reviewed and approved by the reviewing agency, on both the survey and testing programs.

Stage 3

Following completion of site importance evaluation, those sites that are found to be non-unique, non-significant, and without demonstrated importance will require no further analysis or assessment. As mandated by CEQA, mitigation will have been achieved by recordation, testing, and submittal of the testing report. For those sites that are determined to be important resources, alternate means of achieving mitigation can be pursued. In general, these forms of mitigation include:

- site avoidance by preservation of the site in a natural state in open space or in open space easements;
- site avoidance by preservation through capping the site and placing landscaping on top of the fill;
- data recovery through implementation of an excavation and analysis program; or
- a combination of one or more of the above measures.

Additionally, a plan shall be developed for the onsite presentation and interpretation of the results of the archaeological studies at an interpretive center. This could be accomplished through adaptive reuse of one of one of the historic structures within the project or through construction of a building within one of the parks or community centers.

Site Avoidance/Preservation

As stated in CEQA Appendix K, site preservation is the preferred mitigation measure for cultural resources. While potential impacts to most cultural resource sites can be mitigated by performing data recovery, analysis, and interpretation, certain classes of sites or resources are such that avoidance and preservation are the only feasible mitigation. For avoidance to be

considered as an adequate mitigation, it must be clearly demonstrated that a site will, in fact, be avoided by all project activities such that no possible adverse impacts, direct or indirect, could occur. Specific avoidance measures may include either the location of sites in currently proposed open space areas, or in particular instances, even more specific project design to avoid the resource by maintaining it in a dedicated open space. These design measures can include capping of sites with sterile fill soil and/or placing restrictions on access and usage of individual parcels as well as public parks and public open spaces. If preservation through avoidance is infeasible, then programs for data recovery will need to be designed and implemented.

Data Recovery

For those sites that are found to be important resources and for which avoidance and preservation is not feasible or appropriate, a data recovery plan will be prepared. The plan, while it may be part of a much larger program for several sites under study, will be site specific. The plan will, at a minimum, include the following:

1. A statement of why data recovery is appropriate as a mitigation measure.
2. A research plan that explicitly provides the research questions that can reasonably be expected to be addressed by excavation and analysis of the site. The research plan may deviate from the suggested research questions provided by the reviewing agency but if this is the case, the rationale for rejecting certain research questions should be provided and more relevant questions posed.
3. A statement of the types and kinds of data that can reasonably be expected to exist at the site (based on the Phase 1 testing) and how these data will be used to answer important research questions.
4. A step-by-step discussion of field and laboratory methods to be employed. This will include the sampling strategy, methods of excavation and recovery of materials for

special studies, and laboratory techniques for the analysis and interpretation of the materials.

5. Provisions for curation and storage of the artifacts, notes, and photographs will be stated. A memorandum of agreement may be appropriate to formalize the curation policy.

### 5.4.2 Historic Resources

Mitigating measures for historic resources are essentially the same as for prehistoric resources as described above. The same steps and stages should be followed. Mitigation of impacts to historic resources through preservation may be more feasible for historic sites than for prehistoric sites because they generally comprise a smaller area and can often be synthesized into a development plan.

If in situ preservation is not possible, recovery of all possible information, both surface and subsurface, is the only other acceptable alternative. The data recovery program will be integrated with a corresponding archival research program to fully assess the significance of the material found on the sites. By creating a complementary research program that fully incorporates the archival material with the field results, many important research questions can be addressed.

### 5.4.3 Prehistoric/Historic Resources

Mitigating measures for prehistoric/historic resources are essentially the same as for prehistoric and historic resources as described above. The same steps and stages should be followed although, as described in the RMP, archival research and historical documentation may be used to augment field testing programs. Mitigation of impacts to historic components of prehistoric/historic resources through preservation may in some instances be more feasible than

for the prehistoric components because they generally comprise a smaller area and can often be synthesized into a development plan.

If in situ preservation is not possible, recovery of a representative amount or sample of information, both surface and subsurface, is the only other acceptable alternative. For historic components, the data recovery program will be integrated with a corresponding archival research program to fully assess the significance of the material found on the sites. By creating a complementary research program that fully incorporates the archival material with the field results, many important research questions can be addressed.

Appendix B more fully describes the entire program as it applies to all cultural resources.

## 5.5 Prominent Landforms and Steep Slopes

Prominent landforms within Otay Ranch include the Jamul Mountains, portions of the San Ysidro Mountains, the Otay River Valley and other associated ridges and drainages. In general, prominent landforms would be included within the Preserve. Eight-three percent of the slopes with gradients of 25% or greater would be preserved in conjunction with implementation of the approved plan. Grading standards and requirements are incorporated in the GPA/GDP/ Subregional Plan. That document should be referenced for additional information regarding steep slopes.

## 5.6 Floodplains

Four FEMA-mapped floodplains are located within the Otay Ranch study area - the Otay River corridor, portions of Poggi Canyon, portions of Proctor Valley,and portions of Johnson Canyon as illustrated in Figure 8. The Otay River floodplain will be restored and reconfigured in

conjunction with implementation of flood control facilities and a regional park along the Otay River corridor. Design of the floodway shall be consistent with policies include in Chapter 4 of this document. A portion of the Johnson Canyon floodplain has been mapped by FEMA. This area also is under study by Caltrans for potential future construction of SR-125. As described previously, the SR-125 right-of-way area has not been included within the Preserve pending the results of the Caltrans route adoption study.

## 5.7 Paleontological Resources

The primary goal of the Otay Ranch RMP from the perspective of paleontological resources is the preservation and interpretation of fossils that are discovered during the grading and excavation activities. Because grading and excavation will not occur within the Preserve except for limited recreation, research, and infrastructure facilities, it is anticipated that fossils will be recovered primarily in those portions of the Ranch designated for development. Fossils recovered during grading and excavation could be displayed within research and/or interpretive center(s) located within the Preserve, most appropriately within the proposed Otay Valley regional park.

## 5.8 Recreational Uses

The Otay Ranch property has been in private ownership and to date has provided little recreational value to residents of the South County area. The primary existing recreational resource in the vicinity is Otay Lakes, managed by the City of San Diego Water Utilities Department and the California Department of Fish and Game for fishing. New public recreational opportunities will be created in conjunction with the implementation of the Otay Ranch development plan and the Otay Valley regional park if adopted.

In the context of public recreation, the primary goal of the RMP is to provide opportunities for passive recreation within the Preserve that are consistent with resource protection. In addition, 400 acres within the Preserve are available for active recreational uses.

## 5.9 Agriculture

Establishment of the Preserve will provide opportunities for creation of demonstration agricultural uses within the Preserve. The area in the vicinity of Bird Ranch has been identified as an area suitable for demonstration agriculture. Demonstration agricultural activities must be compatible with RMP policies and standards for resource protection and enhancement.

# APPENDIX

# CONCEPTUAL REVEGETATION PLANS

# Conceptual Coastal Sage Scrub Revegetation Plan (including Maritime Succulent Scrub)

## Purpose

The primary purpose of the revegetation plan is to provide guidelines, criteria, and methodologies by which coastal sage scrub habitat can be re-established or enhanced on Otay Ranch. Tables 1A, 1B, 1C summarize the total acreage of various types of coastal sage scrub habitat on Otay Ranch, and the acreage anticipated to be preserved and disturbed in conjunction with implementation of the Otay Ranch GDP/Subregional Plan. Tables 1A, 1B and 1C also note the acreage anticipated to be available for coastal sage scrub restoration within the Otay Ranch Preserve. The acreage breakdown and locations of potential restoration areas within the Preserve are described in Section 4.3.5 of this document. This document suggests design criteria, provides planting recommendations, and describes a monitoring program.

## Design Criteria

The general design principle for each site will be to create Diegan coastal sage scrub habitat or enhance existing degraded coastal sage scrub habitat to a condition similar to that found on undisturbed portions of Otay Ranch. Slope areas will be hydroseeded with native low-growing shrubs, perennials, and annuals. Larger shrubs will be hand planted from container stock in a drift pattern to approximate native distributions.

### Grading

Where available, topsoil stripped from areas of coastal sage scrub during project grading should be acquired and spread evenly (3-5" deep) over slopes to be revegetated. Finished slopes should

**TABLE 1A. ANTICIPATED PRESERVATION AND DISTURBANCE OF COASTAL SAGE SCRUB HABITAT**

| Total CSS on Otay Ranch | | Preserved CSS on Otay Ranch | | | Total CSS Impacted | |
|---|---|---|---|---|---|---|
| CSS Habitat Types | Total # Acres | Acres in Preserve | Acres in Non Preserve Open Space | Total # Acres Preserved | Total # Acres Lost | % Lost |
| CSS | 10,364 | 6,413 | 1,166 | 7,579 | 2,785 | 27% |
| MSS | 285 | 228 | 0 | 228 | 57 | 20% |
| DCSS | 761 | 208 | 0 | 208 | 553 | 72% |
| **TOTAL** | **11,410** | **6,849** | **1,166** | **8,015** | **3,395** | **30%** |

**TABLE 1B. POTENTIAL COASTAL SAGE SCRUB RESTORATION AREAS WITHIN THE PRESERVE**

| HABITAT | OTAY VALLEY | PROCTOR VALLEY | SAN YSIDRO | |
|---|---|---|---|---|
| | Acres in Open Space | Acres in Open Space | Acres in Open Space | Total Acres in Open Space |
| DCSS | 0 | | 0 | 208 |
| NG | 541 | 2 | 367 | 1,083 |
| AG | 483 | 0 | 0 | 483 |
| Totals | 1,024 | 210 | 367 | 1,601 |
| **Active Recreation in Otay Valley** | **-400** | **—** | **—** | **1,201** |

**TABLE 1C. COASTAL SAGE SCRUB PRESERVATION/DISTURBANCE/ RESTORATION SUMMARY**

| Total CSS | CSS Preserved | | CSS Lost | | CSS Restored | Net Change Following Restoration | |
|---|---|---|---|---|---|---|---|
| | Acres | % | Acres | % | | Acres | % |
| 1,410 | 8,015 | 70% | 3,395 | 30% | 1,201 | -2,194 | -19% |

Legend: CSS = Coastal sage scrub
DCSS = Disturbed coastal sage scrub
MSS = Maritime succulent scrub
NG = Non-native Grassland
AG = Agriculture

be rolled with a sheepfoot roller or raked parallel to the contours to create small depressions that hold moisture and reduce erosion potential. Grading is likely to be unnecessary for enhancement efforts, unless the habitat is severely disturbed.

## Plant Materials and Installation Specifications

Implementation of the revegetation plan must be coordinated among the project biologist, landscape architect, landscape contractor, and plant material contractor. The contracting nursery and seed collectors should be given the maximum possible lead time to prepare plant material for the project in order to assure availability and minimize cost. The construction drawings prepared by the landscape architect should be reviewed by the appropriate jurisdiction(s) concurrent with the review of this document.

Installation of plant materials and the irrigation system will be the responsibility of the property owner and will be substantially completed prior to final inspection. Implementation of a monitoring program and maintenance of the revegetation area, including irrigation, weed control, and replanting (if required), will be the responsibility of the property owner.

## Species Composition

Species to be planted in the revegetation area will be Diegan coastal sage scrub species similar to those on undisturbed portions of the site. These include California sage brush (*Artemisia californica*), white sage (*Salvia apiana*), Munz's sage (*Salvia munzii*), lemonadeberry (*Rhus integrifolia*), redberry (*Rhamnus crocea*), laurel sumac (*Malosma laurina*), flat-top buckwheat (*Eriogonum fasciculatum*), toyon (*Heteromeles arbutifolia*), shore cactus (*Opuntia littoralis*), San Diego County viguiera (*Viguiera laciniata*), and redbush monkeyflower (*Diplacus puniceus*). Understory species to be used in the revegetation site include purple needlegrass (*Stipa pulchra*), early onion (*Allium praecox*), common golden-star (*Bloomeria crocea*), mariposa lily (*Calochortus splendens*), wild hyacinth (*Dichelostemma pulchella*), blue-eyed grass

(*Sisyrinychium bellum*), deerweed (*Lotus scoparius*), and golden yarrow (*Eriophyllum confertiflorum*) (see Table 2).

## Plant Materials

Plant materials for the revegetation area will include 1 gallon and liner size container stock of laurel sumac, lemonadeberry, and redberry, toyon, and unrooted cuttings of cacti. Unrooted cuttings of cacti are recommended because they are much less expensive than rooted cuttings, which must be planted from liners. Unrooted cuttings must be planted between 15 November and 15 April to maximize survivorship. Container stock of the larger shrubs will be planted in drifts. Seeds and bulbs of all other species to be used (Table 2) will be included in the hydroseed mix. The nursery that provides plant materials should be contacted at least 90 days prior to initiation of revegetation efforts.

## Planting Arrangement

All of the proposed revegetation areas are to be hydroseeded with the seed mix in Table 2. Native shrubs should be incorporated into the landscaping plan and planted as follows:

1) Larger shrubs should be clustered in groups of six to fifteen individuals of the same species. Spacing between individual shrubs should be 8-15 feet. Shrubs should be planted in natural drifts that flow with the contour of the site and approximate the visual appearance of the large shrub masses in undisturbed areas. Lines of shrubs following small drainageways in natural areas above or below the revegetation areas should be visually continued. Areas between shrubs should be hydroseeded.

## TABLE 2. RECOMMENDED SPECIES FOR COASTAL SAGE SCRUB REVEGETATION

Container Stock

*Heteromeles arbutifolia* - toyon
*Malosma laurina* - laurel sumac
*Rhus integrifolia* - lemonadeberry
*Rhamnus crocea* - redberry
*Opuntia littoralis* - mesa prickly pear
*Opuntia parryi* var. *serpentina* - snake cholla
*Opuntia prolifera* - coast cholla

Hydroseed

*Achillea millefolium* - yarrow
*Achnatherum diegoensis* - San Diego County needlegrass
*Artemisia californica* - California sage brush
*Baccharis sarothroides* - broom baccharis
*Cleome isomeris* - bladder pod
*Corethrogyne filaginifolia* - cudweed aster
*Mimulus aurantiacus* - bush monkeyflower
*Dudleya edulis* - ladies fingers
*Dudleya pulverulenta* - chalk lettuce
*Encelia californica* - California bush sunflower
*Eriogonum fasciculatum* - flat-top buckwheat
*Eriophyllum confertiflorum* - golden yarrow
*Isocoma veneta* - coast goldenbush
*Lotus scoparius* - deerweed
*Nasella pulchra* - purple needlegrass
*Salvia apiana* - white sage
*Salvia munzii* - Munz's sage
*Sisyrinchium bellum* - blue-eyed grass
*Yucca whipplei* - Mohave yucca
*Viguiera laciniata* - San Diego County viguiera

Bulbs

*Allium praecox* - early onion
*Allium haematochiton* - red-skin onion
*Bloomeria crocea* - common golden-star
*Calochortus splendens* - mariposa lily
*Chlorogalum parviflorum* - amole
*Dichelostemma pulchella* - wild hyacinth

2) Cactus pads should be planted by burying one-third of the pad in groupings of 12-18 pads spaced 3-8 feet apart. Groupings should be tear-drop shaped.

## Planting Procedure

Standard planting procedure for container stock is to dig a hole about twice the size of the rootball of the plant. Then the hole is filled with water and allowed to drain. Next, the plant is positioned so that the surface of the soil in the container is at ground level. Finally, soil is filled in and firmed around the rootball of the plant.

## Timing of Plant Installation

Appropriate timing of planting may decrease or eliminate the need for supplemental watering and will increase the survival of the plants. The best survival rates are achieved when seeding and planting occur between 15 November and 15 April in order to take advantage of seasonal rainfall.

## Irrigation Requirements

The goal of the revegetation plan is to create a functioning coastal sage scrub community capable of maintaining and supporting itself. Native plants require irrigation for establishment when they have been grown in nursery containers. A temporary irrigation system should be designed to function for at least three summers and then be discontinued.

The slope plantings should be watered deeply and infrequently for good root development. Irrigating the top layer alone promotes shallow root growth that will not support mature plants after the irrigation has been discontinued. Irrigation on the slopes should be by drip system, with an additional temporary overhead spray system for germination of hydroseed only.

## Replacement Planting

Ninety days following the final walk-thru at the end of the installation, hydroseed areas are to be checked for germination and plant viability. Container stock that has not survived shall be replaced. Eroded areas of the slopes shall be repaired and reseeded. Hydroseed areas larger than 25 square feet that show no significant germination shall be re-hydroseeded or hand-seeded.

In September, following the first summer, the plants shall be checked again for viability. If more than 10 percent of the container stock or 20 percent of the cuttings have not survived, the dead plant material shall be removed and replaced with the same size material as was planted originally (except where mortality is judged to be a result of inappropriate soil or water conditions). Replacement planting should be done in November or December. The viability check in September should be part of a technical assessment described below.

## Management Plan

The purpose of the management plan is to provide guidelines for maintenance of the revegetated habitat. Because the goal of the revegetation plan is to create a natural system that can support itself with little or no maintenance, the primary effort of the maintenance plan is concentrated in the first few seasons of growth.

## Maintenance

1) The revegetated area shall be spray and drip irrigated during the drier parts of the year, primarily the summer months. If necessary, irrigation should last for the minimum amount of time necessary to establish.

2) The site shall not be fertilized during the maintenance period.

3) The revegetated area shall not be pruned during the maintenance period.

4) Weedy, non-native species may invade the revegetation site and become a problem before or during the establishment of native plant associations. Among the weedy invasive species that commonly invade irrigated sites in San Diego County are tamarisk (*Tamarix* sp.), pampas grass (*Cortaderia atacamensis*), and tree tobacco (*Nicotiana glauca*). These species should be hand removed as soon as they begin to invade and before they become too large for hand extraction. Weeding by hand shall continue until planted species are established.

5) Weedy species that invade non-irrigated enhanced sites include filaree (*Erodium* spp.), mustards (*Brassica* and *Sisymbrium* spp.), tocalote (*Centaurea melitensis*), and non-native grasses (*Avena*, *Bromus*, etc.). These species should be hand removed as soon as they begin to invade.

## Monitoring

The revegetation effort should be assessed in September following the first summer after planting to determine mortality of individuals, initial success of hydroseeding, and functioning of irrigation. The number, size, and species of dead plants shall be recorded, along with percent cover. Success standards for coverage are presented in Table 3. If the assessment reveals greater than 10 percent mortality of container stock or 20 percent mortality of cuttings, replacement plantings will be required. Mortality judged to be the result of competition for resources with other native species appropriate to the revegetation effort or a result of inappropriate soil moisture conditions will not require replacement planting. Mortality should be assessed in each of the annual surveys.

**TABLE 3. RECOMMENDED GOALS FOR COVER**

| Vegetation Type | Coverage Goal | Coverage Range |
|---|---|---|
| Shrubs | 50% | 40-65% |
| Herbs | 30% | 20-30% |
| Bare Ground | 20% | 10-30% |

The revegetation site should be monitored twice per year for three to five years. Monitoring should consist of a field check during the spring by a qualified biologist (TWS or ESA certification or recommendation by USFWS). The biologist should assess percent cover, size of individuals, and use of the revegetated area by wildlife species. Spring monitoring sessions should determine the need to continue the temporary irrigation through the following year. Fall monitoring should be conducted to determine mortality as described above. Photographic documentation of the revegetation site from selected vantage points is highly recommended. A brief report outlining the result of the monitoring surveys should be submitted to the appropriate jurisdiction. The monitoring reports shall describe the existing conditions of the site, identify all shortcomings of the revegetation plan, and recommend remedial measures necessary for the successful completion of the revegetation project. The annual reports should be submitted by 1 December of each year.

Mitigation monitoring and reporting programs (MMRPs) carried out in conjunction with CEQA review of individual developments within Otay Ranch will provide an additional opportunity to verify that monitoring and restoration activities described in the RMP are implemented. Monitoring of RMP activities will likely be a component of CEQA-related MMRPs because RMP activities will likely be identified as mitigation measures in future project-specific EIRs for development within Otay Ranch.

## Purpose

The primary purpose of the riparian revegetation plan is to provide guidelines, criteria, and methodologies by which high quality riparian habitat can be established in degraded wetland habitats such as broom baccharis scrub, tamarisk scrub, and mulefat scrub. Tables 4A, 4B, 4C summarize the total acreages of various types of wetland habitat on Otay Ranch and the acreages expected to be preserved and disturbed in conjunction with implementation of the Otay Ranch GDP/Subregional Plan. Tables 4A, 4B, and 4C also note the acreage anticipated to be available for wetlands restoration within the Otay Ranch Preserve. The acreages and locations of potential wetlands restoration areas within the Preserve are described in Section 4.3.5 of this document. This document describes design criteria, provides planting recommendations, and establishes guidelines for a monitoring program.

## Design Criteria

The general design principle is to create a willow riparian woodland alternating with areas of freshwater marsh and sycamore-alluvial woodland, similar to that found in the Otay River Valley immediately west of Interstate Highway 805. The floodplain areas will be hydroseeded with native, low growing, hydrophytic shrubs, perennials, and annuals. Larger shrubs and trees will be hand planted from container stock; willows will be planted from cuttings.

## Grading

Grading will be required in areas that either are considerably above the floodplain elevation or are intended for creation of freshwater marsh.

| TABLE 4A. ANTICIPATED PRESERVATION AND DISTURBANCE OF WETLAND HABITATS | | | | |
|---|---|---|---|---|
| TOTAL WETLANDS ON OTAY RANCH | | ACRES PRESERVED | ACRES IMPACTED | |
| Wetland Habitat Type | Total # Acres | | Total # Acres Lost | % Lost |
| Baccharis Scrub | 19 | 19 | 0 | 0% |
| Tamarisk/ Scrub | 396 | 383 | 13 | 3.2% |
| Baccharis floodplain Scrub | 113 | 113 | 0 | 0% |
| Alkali Meadow | 138 | 105 | 33 | 24% |
| Disturbed Alkali Meadow | 12 | 5 | 7 | 58% |
| Southern Willow Scrub | 14 | 13 | 1 | 7% |
| Freshwater Marsh | 3 | 3 | 0 | 0% |
| Aquatic Habitat | 3 | 0 | 3 | 100% |
| TOTALS | 698 | 641 | 57 | 8% |

| TABLE 4B. POTENTIAL WETLAND RESTORATION AREAS WITHIN THE PRESERVE | | | | |
|---|---|---|---|---|
| HABITAT | OTAY RIVER | PROCTOR VALLEY | SAN YSIDRO | Total Acres in Open Space |
| | Acres in Open Space | Acres in Open Space | Acres in Open Space | |
| Tamarisk/ scrub | 383 | 0 | 0 | 383 |
| Baccharis floodplain scrub | 113 | 0 | 0 | 113 |
| Baccharis scrub | 19 | 0 | 0 | 19 |
| Disturbed Alkali meadow | 0 | 5 | 0 | 5 |
| Total | 515 | 5 | 0 | 520 |

| TABLE 4C. WETLANDS PRESERVATION/DISTURBANCE/ RESTORATION SUMMARY | | | | | | | |
|---|---|---|---|---|---|---|---|
| Total Wetlands | Wetlands Preserved | | Wetlands Lost | | Wetlands Restored | Net Change Following Restoration | |
| | Acres | % | Acres | % | | Acres | % |
| 698 | 641 | 92% | 57 | 8% | 520 | +463 | +66% |

## Plant Materials and Installation Specifications

Implementation of the revegetation plan must be coordinated among the project biologist, landscape architect, landscape contractor, and plant material contractor. The contracting nursery and seed collectors should be given the maximum possible lead time to prepare plant material for the project in order to assure availability and minimize cost. The construction drawings prepared by the landscape architect will be reviewed by the appropriate jurisdiction(s) concurrent with the review of this document.

Installation of plant materials and the irrigation system (if required) will be the responsibility of the property owner and will be substantially completed prior to final inspection. Implementation of monitoring program Maintenance of the revegetation area, including irrigation, weed control, and replanting (if required), will be the responsibility of the property owner.

## Species Composition

Species to be planted in the revegetation area will be willow riparian species similar to those found in other riparian areas in coastal San Diego County. These include arroyo willow (*Salix lasiolepis*), sandbar willow (*Salix hindsiana*), Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), Mexican elderberry (*Sambucus mexicana*), and mulefat (*Baccharis salicifolia*). Floodplain understory species to be planted in the revegetation site include western ragweed (*Ambrosia psilostachya*), San Diego marsh-elder (*Iva hayesiana*), spiny rush (*Juncus acutus* var. *sphaerocarpus*), coast goldenbush (*Isocoma veneta*), curly dock (*Rumex crispus*), San Diego ragweed (*Ambrosia pumila*) and others (see Table 5).

### Plant Materials

Plant materials for the revegetation will include container stock of western sycamore, Fremont cottonwood, and Mexican elderberry, and unrooted cuttings of willows. Unrooted cuttings of willow are recommended because they are less expensive than rooted willow cuttings, and do

not require labor-intensive transplanting. Unrooted cuttings must be planted between 15 November and 15 April to maximize survivorship. If deemed appropriate by the plant material contractor, container stock of sycamore and cottonwood may be replaced by additional unrooted cuttings. Shrub and tree species recommended for transplantation are listed in Table 5. Seeds of all other species to be used (Table 5) will be included in the hydroseed mix.

## TABLE 5. RECOMMENDED SPECIES FOR RIPARIAN REVEGETATION

Container Stock

*Populus fremontii* - Fremont cottonwood
*Platanus racemosa* - western sycamore
*Sambucus mexicana* - Mexican elderberry

Cuttings

*Salix lasiolepis* - arroyo willow
*Salix gooddingii* - southwestern willow
*Salix hindsiana* - sandbar willow

Hydroseed Mix

*Ambrosia psilostachya* - western ragweed
*Ambrosia pumila* - San Diego ragweed
*Artemisia douglasiana* - mugwort
*Artemisia palmeri* - San Diego sagewort
*Baccharis salicifolia* - mulefat
*Eleocharis* sp. - spike-sedge
*Elymus condensatus* - giant rye grass
*Epilobium adenocaulon* - willow-herb
*Epilobium cana* - California fuchsia
*Isocoma veneta* - coast goldenbush
*Iva hayesiana* - San Diego marsh-elder
*Juncus acutus* var. *sphaerocarpus* - spiny rush
*Juncus mexicana* - Mexican rush
*Juncus dubius* - mariposa rush
*Oenothera elata* - great marsh evening-primrose
*Pluchea odorata* - salt marsh fleabane
*Scirpus* sp. - bulrush
*Typha* sp - cattail

Willow cuttings should be at least 18 inches long and at least three-eighths inch in diameter. The larger the diameter of the cuttings, the greater the survival rate. Cuttings should be cut flat across the top end to reduce water loss, and diagonally across the bottom to increase surface area for water uptake. Cutting in this manner also facilitates recognition of the correct end for planting. The bottom end of the cutting should be dipped in rooting hormone and the top end in tree seal.

The cuttings should be inserted halfway into the ground. Other specifications as required should be available from the project biologist. The nursery that provides plant materials should be contacted 90 days prior to initiation of revegetation efforts. Few nurseries have experience dealing with native plants, especially those not used for ornamentals.

**Planting Arrangement**

Freshwater marsh (emergent aquatic vegetation) should be created or enhanced in low areas where this plant community is recovering naturally and in a mosaic or disjunct pattern within southern willow scrub. These should be hydroseeded with a seed mix that contains substantial amounts of bulrush (*Scirpus* sp.), cattail (*Typha* sp.), and rushes (*Juncus* spp.). Areas surrounding freshwater marsh should be hydroseeded with shrub species, including mulefat, mugwort, and coast goldenbush.

Sycamores and cottonwoods, if required, should be clustered in groups of three to ten individuals of the same species. Spacing between individual trees should be between 10 and 20 feet. An alternative to transplanting sycamores and cottonwoods is the total dependence upon willow cuttings. To maximize the potential for success, approximately 3,000 cuttings per acre should be used.

**Planting Procedure**

Standard planting procedure for container stock is to dig a hole about twice the size of the rootball of the plant. Then the hole is filled with water and allowed to drain. Next, the plant

is positioned so that the surface of the soil in the container is at ground level. Finally, soil is filled in and firmed around the rootball of the plant.

## Timing of Plant Installation

Appropriate timing of planting may decrease or eliminate the need for supplemental watering and will increase the survival of the plants. The best survival rates are achieved when willows are planted between 15 November and 15 April. Planting at the site should be accomplished during the early spring. Hydroseeding should be timed to take advantage of seasonal rainfall patterns and should be applied as soon as possible.

## Irrigation Requirements

The goal of the riparian revegetation plan is to create a functioning riparian system capable of maintaining and supporting itself. However, native plants may require irrigation for establishment when they have been grown in nursery containers and are planted in a river channel. If deemed appropriate by the landscape architect and landscape contractor, a temporary irrigation system should be installed that will function for at least two summers and then discontinued.

## Replacement Planting

In September, following the first summer, the plants should be checked for viability. If more than 10 percent of the container stock or 20 percent of the cuttings have not survived, the dead plant material shall be removed and replaced with the same size material as was planted originally (except where willow mortality is judged to be the result of inappropriate soil or water conditions). Replacement planting should be done in November or December. The viability check in September should be part of a technical assessment described below.

## Management Plan

The purpose of the management plan is to provide guidelines for maintenance of the revegetated habitat. Because the goal of the revegetation plan is to create a natural system that can support itself with little or no maintenance, the primary effort of the maintenance plan is concentrated in the first few seasons of growth.

## Maintenance

1) The revegetated area should be spray irrigated during the drier parts of the year, primarily the summer months. Irrigation should last for a minimum of two years.

2) Native understory species will not be cleared in the revegetated areas. If the accumulation of plant material reduces channel capacity, a narrow pilot channel may be cleared.

3) The site will not be fertilized during the maintenance period. The riparian vegetation will not be pruned.

4) Non-native species may invade the revegetation site and become a problem before or during the establishment of native plant associations. Weedy, invasive, non-native species, such as tamarisk (*Tamarix* sp.), pampas grass (*Cortaderia atacamensis*), giant cane (*Arundo donax*), castor-bean (*Ricinus communis*), and tree tobacco (*Nicotiana glauca*), should be hand removed as soon as they begin to invade and before they become too large for hand extraction. Weeding by hand shall continue until planted species are established.

## Monitoring

The revegetation effort should be assessed in September following the first summer after planting to determine mortality of individuals, initial success of hydroseeding, and functioning of irrigation. The number, size, and species of dead plants should be recorded, along with percent cover. Success standards for coverage are presented in Table 6. If the assessment reveals

greater than 10 percent mortality of container stock or 20 percent mortality of willow cuttings, replacement plantings will be required. Mortality judged to be the result of competition for resources with other native species appropriate to the revegetation effort or a result of inappropriate soil moisture conditions will not require replacement planting. Mortality should be assessed in each of the annual surveys.

**TABLE 6. RECOMMENDED GOALS FOR COVER**

| Vegetation Type | Coverage Goal | Coverage Range |
|---|---|---|
| Trees | 50% | 40-60% |
| Shrubs | 25% | 20-30% |
| Herbs | 8% | 5-15% |
| Emergent aquatic | 15% | 10-20% |
| Bare Ground/Open Water | 2% | 0-5% |

The revegetation site should be monitored twice per year for three to five years. Monitoring should consist of a field check during the spring by a qualified biologist (TWS or ESA certification or recommendation by USFWS). The biologist should assess percent cover, size of individuals, and use of the revegetated area by wildlife species. Spring monitoring sessions should determine the need to continue the temporary irrigation through the following year. Fall monitoring should be conducted to determine mortality as described above. Photographic documentation of the revegetation site from selected vantage points is highly recommended. A brief report outlining the result of the monitoring surveys should be submitted to the appropriate jurisdiction(s). The monitoring reports shall describe the existing conditions of the site, identify all shortcomings of the revegetation plan, and recommend remedial measures necessary for the successful completion of the revegetation project. The annual reports should be submitted by 1 December of each year.

Mitigation monitoring and reporting programs (MMRPs) carried out in conjunction with CEQA

review of individual developments within Otay Ranch will provide an additional opportunity to verify that monitoring and restoration activities described in the RMP are implemented. Monitoring of RMP activities will likely be a component of CEQA-related MMRPs because RMP activities will likely be identified as mitigation measures in future project-specific EIRs for development within Otay Ranch.

## Purpose

The primary purpose of the revegetation plan is to provide guidelines, criteria, and methodologies by which native grasslands can be re-established or enhanced on Otay Ranch. Tables 7A, 7B, 7C summarize the total acreage of disturbed and undisturbed native grassland on Otay Ranch and acreages anticipated to be preserved and disturbed in conjunction with implementation of the Otay Ranch GDP/Subregional Plan. Tables 7A, 7B and 7C also note the acreage available for native grassland restoration within the Otay Ranch Preserve. The acreages and locations of potential native grassland restoration areas within the Preserve are described in Section 4.3.5 of this document. The following discussion suggests design criteria, provides planting recommendations, and describes a monitoring program.

## Design Criteria

The general design principle for Otay Ranch will be to create native grassland or enhance existing degraded native grassland to a condition similar to that found on undisturbed portions of the Ranch. Slope areas will be revegetated with plugs of native needlegrass and bulbs of low perennials and hydroseeded with native low-growing perennials and annuals.

**TABLE 7A. ANTICIPATED PRESERVATION AND DISTURBANCE OF NATIVE GRASSLAND HABITAT**

| TOTAL NATIVE GRASSLAND ON OTAY RANCH | | ACRES PRESERVED | ACRES IMPACTED | |
|---|---|---|---|---|
| | Total # Acres | | Total # Acres Lost | % Lost |
| Valley Needlegrass Grassland | 49 | 41 | 8 | 16% |
| Disturbed Valley needlegrass Grassland | 215 | 25 | 190 | 88% |
| TOTALS | 264 | 66 | 198 | 75% |

| TABLE 7B. POTENTIAL NATIVE GRASSLAND HABITAT RESTORATION AREAS WITHIN THE PRESERVE | | | | |
|---|---|---|---|---|
| HABITAT | OTAY RIVER | PROCTOR VALLEY | SAN YSIDRO | Total Acres in Open Space |
| | Acres in Open Space | Acres in Open Space | Acres in Open Space | |
| Non-native grassland | 173 | 0 | 0 | 173 |
| Disturbed Valley needlegrass grassland | 0 | 25 | 0 | 25 |
| **T o t a l** | **173** | **25** | **0** | **198** |

| TABLE 7C. NATIVE GRASSLAND PRESERVATION/DISTURBANCE/ RESTORATION SUMMARY | | | | | | | |
|---|---|---|---|---|---|---|---|
| Total Native Grassland | Native Grassland Preserved | | Native Grassland Lost | | Native Grassland Restored | Net Change Following Restoration | |
| | Acres | % | Acres | % | | Acres | % |
| 264 | 66 | 25% | 198 | 75% | 198* | 0 | 0% |

* The restorable areas include primarily non-native grassland on the north facing slopes south of the Otay River. This area is appropriate for restoration with a mosaic of coastal sage scrub and native grassland habitat.

## Grading

Where available from grading activities associated with project implementation in the general vicinity of the site, topsoil striped from areas of native grassland should be acquired and spread evenly over slopes to be revegetated. Finished slopes should be rolled with a sheepfoot roller or raked parallel to the contours to create small depressions that hold moisture and reduce erosion potential. Grading is likely to be unnecessary for enhancement efforts.

## Plant Materials and Installation Specifications

Implementation of the revegetation plan must be coordinated among the project biologist, landscape architect, landscape contractor, and plant material contractor. The contracting nursery and seed collectors should be given the maximum possible lead time to prepare plant material for the project in order to assure availability and minimum cost. The construction drawings prepared by the landscape architect will be reviewed by the appropriate jurisdiction(s) concurrent with the review of this document.

Installation of plant materials and the irrigation system, implementation of a monitoring program, and maintenance of the revegetation area, including irrigation, weed control, and replanting (if required) will be the responsibility of the property owner.

## Species Composition

Species to be planted in the revegetation area will be native grassland species similar to those on undisturbed portions of the site. These include foothill needlegrass (*Nassella lepida*), purple needlegrass (*Nassella pulchra*), common golden-star (*Bloomeria crocea*), mariposa lily (*Calochortus splendens*), wild hyacinth (*Dichelostemma pulchella*), blue-eyed grass (*Sisyrinchium bellum*), early onion (*Allium praecox*), fascicled tarweed (*Hemizonia fasciculatum*), golden yarrow (*Eriophyllum confertiflorum*), and others (see Table 8).

## Plant Materials

Plant materials for the revegetation area will include plugs of native *Nassella* species, bulbs of native perennials (e.g., *Allium*, *Dichelostemma*), and seeds of all other species to be used (Table 8). The nursery that provides plant materials should be contacted 90 days prior to initiation of the revegetation efforts.

## TABLE 8. RECOMMENDED SPECIES FOR NATIVE GRASSLAND REVEGETATION

Plugs

*Nassella pulchra* - purple needlegrass
*Nassella lepida* - foothill needlegrass

Hydroseed

*Achillea millefolium* - yarrow
*Corethrogyne filaginifolia* - cudweed aster
*Eriophyllum confertiflorum* - golden yarrow
*Lotus scoparius* - deerweed
*Sisyrinchium bellum* - blue-eyed grass
*Viola pedunculata* - yellow johnny jump-up
*Hemizonia fasciculatum* - fascicled tarweed

Bulbs

*Allium praecox* - early onion
*Allium haematochiton* - red-skin onion
*Bloomeria crocea* - common golden-star
*Calochortus splendens* - mariposa lily
*Chlorogalum parviflorum* - amole
*Dichelostemma pulchella* - wild hyacinth
*Dodecatheon clevelandii* - Cleveland's shooting-star
*Fritillaria biflora* - Chocolate lily

**Planting Arrangement**

Plugs of native *Nassella* species should be planted at a density of approximately 2,000 plugs per acre. All of the proposed revegetation areas should be hydroseeded with a seed mix similar to that presented in Table 8.

## Timing of Plant Installation

Appropriate timing of planting may decrease or eliminate the need for supplemental watering and will increase the survival of the plants. The best survival rates are achieved when seeding and planting occur between 15 November and 15 April in order to take advantage of seasonal rainfall.

## Irrigation Requirements

The goal of the revegetation plan is to create a functioning native grassland community capable of maintaining and supporting itself. Native plants may require irrigation for establishment when they have been grown in nursery containers. If deemed necessary, a temporary irrigation system may be designed to function for one summer and then be discontinued.

The slope plantings should be watered deeply and infrequently for good root development. Irrigating the top layer alone promotes shallow root growth that will not support mature plants after the irrigation has been discontinued. Irrigation on the slopes should be by drip system, with an additional temporary overhead spray system for germination of hydroseed only.

## Replacement Planting

Ninety days following the final walk-thru at the end of the installation, hydroseed areas should be checked for germination and plant viability. Grass plugs that have not survived shall be replaced. Eroded areas of the slopes shall be repaired and reseeded. Hydroseed areas larger than 25 square feet that show no significant germination shall be re-hydroseeded or hand-seeded.

In September, following the first summer, the plants shall be checked again for viability. If more than 20 percent of the grass plugs have not survived, the dead plant material shall be removed and replaced with the same size material as was planted originally (except where mortality is judged to be a result of inappropriate soil conditions). Replacement planting should

be done in November or December. The viability check in September should be part of a technical assessment described below.

## Management Plan

The purpose of the management plan is to provide guidelines for maintenance of the revegetated habitat. Because the goal of the revegetation plan is to create a natural system that can support itself with little or no maintenance, the primary effort of the maintenance plan is concentrated in the first few seasons of growth.

## Maintenance

1) The revegetated area shall be spray or drip irrigated during the drier parts of the first year, primarily the summer months. Irrigation should last for one year.

2) The site shall not be fertilized during the maintenance period.

3) The revegetated area shall not be pruned during the maintenance period.

4) Weedy, non-native species may invade the revegetation site and become a problem before or during the establishment of native plant associations. Among the weedy invasive species that commonly invade irrigated sites in San Diego County are tamarisk (*Tamarix* sp.), pampas grass (*Cortaderia atacamensis*), and tree tobacco (*Nicotiana glauca*). These species should be hand removed as soon as they begin to invade and before they become too large for hand extraction.

5) Weedy species that invade non-irrigated enhanced sites include filaree (*Erodium* spp.), mustards (*Brassica* and *Sisymbrium* spp.), tocalote (*Centaurium melitensis*), and non-native grasses (*Avena*, *Bromus*, etc.). These species should be hand removed as soon as they begin to invade and continue until the planted species are established.

## Monitoring

The revegetation effort should be assessed in September following the first summer after planting to determine mortality of individuals, initial success of hydroseeding, and functioning of irrigation. The number, size, and species of dead plants shall be recorded, along with percent cover. Success standards for coverage are presented in Table 9. If the assessment reveals greater than 20 percent mortality of grass plugs, replacement plantings will be required. Mortality judged to be the result of competition for resources with other native species appropriate to the revegetation effort or a result of inappropriate soil moisture conditions will not require replacement planting. Mortality should be assessed in each of the annual surveys.

**TABLE 9. RECOMMENDED GOALS FOR COVER**

| Vegetation Type | Coverage Goal | Coverage Range |
|---|---|---|
| Native grasses | 35% | 30-40% |
| Herbs | 45% | 40-50% |
| Bare Ground | 20% | 15-25%* |

* Not to exceed 25%.

The revegetation site should be monitored twice per year for three to five years. Monitoring should consist of a field check during the spring by a qualified biologist (TWS or ESA certification or recommendation by USFWS). The biologist should assess percent cover, vigor of individuals, and use of the revegetated area by wildlife species. Spring monitoring sessions should determine the need to continue the temporary irrigation through the fall. Fall monitoring should be conducted to determine mortality as described above. Photographic documentation of the revegetation site from selected vantage points is highly recommended. A brief report outlining the result of the monitoring surveys should be submitted to the appropriate jurisdiction(s). The monitoring reports shall describe the existing conditions of the site, identify all shortcomings of the revegetation plan, and recommend remedial measures necessary for the successful completion of the revegetation project. The annual reports should be submitted by 1 December of each year.

Mitigation monitoring and reporting programs (MMRPs) carried out in conjunction with CEQA review of individual developments within Otay Ranch will provide an additional opportunity to verify that monitoring and restoration activities described in the RMP are implemented. Monitoring of RMP activities will likely be a component of CEQA-related MMRPs because RMP activities will likely be identified as mitigation measures in future project-specific EIRs for development within Otay Ranch.

## Purpose

The primary purpose of the restoration plan is to provide guidelines, criteria, and methodologies by which vernal pools can be enhanced and restored on Otay Ranch. Tables 10A, 10B, 10C provide a summary of the estimated acres of potentially restorable vernal pool habitat on Otay Ranch that is anticipated to be preserved in conjunction with the implementation of the Otay Ranch GDP/Subregional Plan. The following discussion provides implementation strategies for restoration of vernal pools.

**TABLE 10A. ANTICIPATED PRESERVATION AND DISTURBANCE OF VERNAL POOL HABITAT**

| TOTAL VERNAL POOL HABITAT ON OTAY RANCH | | ACRES PRESERVED | ACRES IMPACTED | |
|---|---|---|---|---|
| | Total # Acres | | Total # Acres Lost | % Lost |
| Vernal Pool Habitat | 178 | 164 (92%) | 14 | 8% |
| **T O T A L S** | **178** | **164 (92%)** | **14** | **8%** |

**TABLE 10B. POTENTIAL VERNAL POOL HABITAT RESTORATION/ AREAS WITHIN THE PRESERVE**

| HABITAT | OTAY RIVER | PROCTOR VALLEY | SAN YSIDRO | Total Acres in Open Space |
|---|---|---|---|---|
| | Acres in Open Space | Acres in Open Space | Acres in Open Space | |
| Vernal Pool Potential Areas | 246 | 42 | 2 | 290 |
| **T o t a l** | **246** | **42** | **2** | **290** |

| TABLE 10C. VERNAL POOL HABITAT PRESERVATION/DISTURBANCE RESTORATION SUMMARY | | | | | | | |
|---|---|---|---|---|---|---|---|
| Total Vernal Pool Habitat | Vernal Pool Habitat Preserved | | Vernal Pool Habitat Lost | | Vernal Pool Habitat Restorable | Net Change Following Restoration | |
| | Acres | % | Acres | % | | Acres | % |
| 178 | 164 | 92% | 14 | 8% | 290 | +276 | +155% |

## Restoration Techniques and Methods

A biologist or resource manager should be present during all restoration activities. Timing of the work is critical to success. Earth movement, decompaction, and recontouring should be accomplished when soils are dry. Seeds should be collected from late spring through summer. [Collection of some species requires a state collection permit.] Seeding is most successful if completed before the first fall rains.

## Decompaction

Decompaction of abandoned dirt roads and trails that traverse vernal pools and associated upland habitat should be accomplished with as little as possible additional damage to the pools and associated habitat. Decompaction loosens the soil, allows rain to penetrate, and facilitates plant growth. Heavy machinery should be used only where there is sufficient room to maneuver without damage to other pools and undisturbed uplands. If this cannot be accomplished, then work should be done with hand tools. Non-basin areas and slopes should be covered with biodegradable erosion control fabric. In some degraded areas, vehicles have splashed soil out of pools. In these situations, the return of the original pool soil may be more important than decompaction.

## Sculpting, Recontouring

The goal of sculpting and recontouring is restoration of the original topography and drainage patterns. In roads that have been decompacted, earth movement may be accomplished using machinery. If this cannot be done without additional damage to vernal pool and adjacent upland habitat, resculpting and recontouring should be done with hand tools. Berms alongside dirt roadways should be smoothed out where they interrupt drainages or have filled portions of pools. Between pools or basins, soil in berms can be used to reconstruct mima mound topography. Within basins, ruts should be smoothed by hand.

## Reseeding Pools

Seed should never be introduced to natural, undisturbed pools. A species (plant or animal) can be reintroduced into a pool where it has been extirpated by disturbance, but not where it has been extirpated due to natural processes. Therefore, prior to reintroduction, pools should be monitored for more than one year to verify the absence of the species in question.

Reseeding should be done only with seeds gathered in immediately adjacent pools. Exceptions for Otay Ranch could be made for a few species where there are no known adjacent pools to use as a source (e.g., *Orcuttia* and *Myosurus* on J 29-30, *Myosurus* on R 1). If enhancement of *Navarretia* on J 29-30 was a goal, then it may be necessary to gather seed from offsite (e.g., J 13) because the population on J 29-30 is so small that it probably would not yield many seeds. Some species are difficult to collect by hand, and it may be necessary to collect seed by a combination of plucking, raking, and vacuuming (Zedler and Scheidlinger 1986). These techniques would be most appropriate for reconstructed road pools that often are devoid of most of the vernal pool flora, including both rare and common vernal pool species. The primary disadvantage of the raking and vacuuming techniques is that they are not selective, and many weed seeds also are gathered. This would be less of a problem if seeds were gathered after a year with greater than average precipitation when most weeds are at a disadvantage. When water stands in basins for over a month, most weed species will die (e.g., Bauder 1987). Seed

collections should be conducted to not impact adversely the source pools by depleting the seed crop of any species, and should conform to the current Fish and Wildlife restrictions on the collection of the federally listed endangered San Diego mesa-mint (*Pogogyne abramsii*). The San Diego mesa-mint example is applicable to the sensitive species on Otay Ranch even if the Otay Ranch species currently are not listed as endangered. Most are annuals with low population densities and are biologically, although not legally, endangered. These restrictions state that it "...is authorized to remove and reduce to possession a maximum of 5 percent or less of the seeds, plant parts, or whole plants annually available from any of the pools specified...." (Fish and Wildlife Service, Permit No. Zedlph-2, 1987). All seed sources and destinations should be clearly marked on maps that are made a part of published monitoring reports, circulated at a minimum to the U. S. Fish and Wildlife Service; Natural Heritage Division, California Department of Fish and Game; and San Diego Natural History Museum.

**Reseeding Non-Pool, Associated Habitat**

Seeds should be collected by hand from adjacent areas and sown by hand. In some cases it may be necessary to prepare the seed bed by scarifying the surface of the soil and/or mulching with weed-free material.

**Creation of Vernal Pools**

Habitat creation should be employed only where there are no other options. Prior to any efforts to develop artificial habitat, the area should be surveyed carefully for the existence of natural pools, whether disturbed or not. Artificial habitat should not supplant restorable natural vernal pool habitat nor adversely affect the associated habitat. Seeding protocol should be the same as for restoration. Before initiating vernal pool creation, the location, methods, performance standards, and monitoring procedures should be reviewed by a project biologists, Preserve Manager, and other interested agencies.

The least radical method of creating additional vernal pool habitat is to start with existing, intact depressions or swales that share similar substrate with nearby areas sustaining vernal pools. The assumption is that these depressions or swales would be fully developed vernal pools if the mesa top were more level, thus retaining water longer. A pilot project near Sacramento used check dams to impound water in existing swales (Sugnet and Associates 1989).

A more costly and risky procedure is to create habitat *de novo*. A variety of methods that have been used was presented at the Restoration and Creation of Vernal Pools Workshop held in February, 1989 under the auspices of the California Department of Fish and Game in Sacramento, California.

**Exotic Plant Removal**

Exotic plant removal and control is one of the most difficult tasks to address, but also is one of the measures that would promote greatly native species populations and ecological health of vernal pools. Once exotics become established, there are few selective methods of removal available. If exotics have become established because of altered hydrology, they usually can be removed when the hydrological problems are resolved (e.g., *Typha* invasion). Hand weeding can be successful if performed at the correct time of year (Bauder 1989, Wood pers. comm.), but it is very time consuming and is used best for small areas. Weeding of annuals should be completed prior to seed set of the exotic plant to be removed and in a manner that disrupts native vernal pool and upland plants least.

Saturation of an area with seeds of native plants may help improve the competitive stance of natives versus exotics. Likewise, revegetating disturbed areas with natives should reduce the seed source of exotics.

The effects of fire are not well known, hence its use as a restoration tool in vernal pools is controversial. In some cases fire may enhance exotics (Zedler and Scheid 1988), but The Nature Conservancy has noticed positive effects at a number of preserves where controlled burns were used (Reiner 1990).

## Priorities for Restoration

Restoration of vernal pool basins and adjacent upland habitat potentially has several benefits to conservation and management of the Otay Ranch vernal pools including the following: maximizing the area of vernal pool habitat; re-establishing sensitive species in areas where they have been extirpated and therefore stabilizing its population; expanding the distributions of sensitive vernal pool species and other vernal pool species in areas where they occur but have been reduced by disturbance or competition with weeds; and controlling exotic species in pools and on adjacent uplands. It is anticipated that restoration would be part of an overall mitigation program consistent with the Resource Management Plan (RMP). The amount of restoration required would reflect anticipated impacts. Essential steps of the vernal pool restoration and management plan would be: preparation of detailed restoration plans including establishment of individual project goals and timelines; coordination with appropriate resource regulatory agencies; completion of site restoration work; monitoring; maintenance; and remediation. Restoration plans for vernal pools should be prepared at a detail similar to high-quality riparian habitat restoration plans, and should be preceded by thorough site surveys, consideration of microtopography, distribution of soils, existing habitat values, and drainage patterns. Restoration design should be carried out only by trained biologists and should be subject to review by resource regulatory agencies and other vernal pool experts. Following successful completion of initial site restoration work, the project should be maintained and monitored pursuant to the stated project goals. Generally, it is anticipated that to document project success, monitoring of restoration programs would occur over three to five years.

Establishing success criteria for vernal pool restoration will be done on a case-by-case basis depending on the resources involved and the type of restoration proposed. For instance, the success of construction and maintenance of a fence to prevent livestock or vehicular access to a vernal pool area as a restoration/mitigation measure would be simple and inexpensive to evaluate. However, the success of a vernal pool creation project would be difficult to measure without first establishing objective, measurable success criteria.

The greatest opportunities for restoration occur in the Otay Mesa pool groups (J29-30, J31 South+, J23-24, and J25) where: the largest amount of restorable habitat exists; re-establishment of highly sensitive species is suggested as appropriate based on their former, documented distributions there; expansion of existing sensitive species populations would greatly improve the chances of survival of some species (particularly Otay Mesa mint [*Pogogyne nudiuscula*]); and controlling the exotic vernal pool dominant English ryegrass (*Lolium perenne*) would cause native species to dominate a large number of vernal pool basins. Also, the Otay Mesa vernal pool groups offer a wide range of vernal pool restoration opportunities including large areas that would require less intensive manipulation. Among the potential restoration benefits, rescuing the population of Otay Mesa mint (*Pogogyne nudiuscula*) through site preservation and restoration is considered extremely important. Also important is establishing a large population of San Diego navarretia (*Navarretia fossalis*). Presently, there is a small population in an area dominated by English ryegrass (*Lolium perenne*). Establishment of San Diego navarretia (*Navarretia fossalis*) within the less disturbed habitat to the north would improve its chances of survival.

It should be noted that the vernal pool resources in the southern parts of J29-30 including J31 South + are degraded in comparison to most of J23-24 and J25, and as a consequence, restoration of J29-30 and J31 South + would require intensive, expensive measures relative to J23-24 and J25. Also, a huge acreage of potentially restorable vernal pool habitat on J29-30 (184.3 acres) in comparison to the other large mesas. J29-30 is indeed a large mesa, much or all of which probably contained vernal pools prior to agricultural use (based upon field work and examination of current aerial photographs). The restorable area (184.3 acres) includes land that is disturbed to varying degrees. It is generally more disturbed toward the south where the land has been leveled, mounds are no longer apparent, and there are only a few occurrences of vernal pool indicator species. It is less disturbed toward the north where the land has been cultivated but not successfully leveled, mounds sometimes are apparent, and occurrences of vernal pool indicator species are few. Therefore, when one evaluates the restoration potential of J29-30, it is critical to keep in mind the large extent of highly disturbed land and the extensive, intensive

restoration that would be required over much of the area. Much of this area would be a very low priority with respect to restoration because of the high degree of disturbance. It is anticipated that most necessary mitigation under the RMP would be carried out on J23, 24, 25 and the undisturbed sections of J29,30. Because of cost considerations, restoration and management should be directed to more promising areas of research, restoration and protection.

Generally, restoration within other vernal pool groups potentially provides significantly less area, fewer pools, and fewer sensitive species ( Otay Mesa mint [*Pogogyne nudiuscula*] has not been recorded north of the Otay River and is inappropriate for introduction based on our current knowledge). The Otay Valley and Poggi Canyon pools mostly are heavily disturbed and would require extensive restoration that should be considered experimental (i.e., K17+, K2, K16+, K15+, M2 and M5+). Only in K2 has a sensitive species been documented (San Diego navarretia [*Navarretia fossalis*]) in 1983 by Tim Cass. The Lower Otay Lake South pools are relatively undisturbed and contain only the sensitive species San Diego button lettuce (*Eryngium aristulatum*). The lack of disturbance suggests that protection and management rather than manipulation are appropriate. The Lower Otay Lake North pools contain a large amount of vernal pool habitat, but only two pools support sensitive species - little mousetail (*Myosurus minimus* var. *apus*) (both on K6). Restoration of this area may provide the opportunity for expansion of the distribution of little mousetail (*Myosurus*) on K6. Recommended restoration techniques include elimination of grazing, removal of non-native weeds, stabilization of mounds through coastal sage scrub restoration, and topographic alteration to repair pools (approximately 5) that have been damaged by dirt roads (1 on K6 and about 4 on K10+). The K6 area has been designated a special study area on the General Development Plan/Subregional Plan Land Use Map.